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EMPLOYERS in any part of the world who require the services of superintendents, mining or civil engineers, metallurgists, chemists, mine or furnace foremen, or other assistance of this character, can have their wants advertised in the ENGINEERING AND MINING JOURNAL without charge.

THE electric lighting of coal breaker No. 5, of the Susquehanna Coal Company, is officially stated to be "economical, satisfactory, and safe." No doubt the electric light will be generally adopted in all the anthracite coal breakers, and at the top and bottom shaft landings, as well as in ore mills and metallurgical works. This promises to prove one of the most important applications of the electric light.

THE Hartsfeld Foreign Patents Association has issued a business card, on which it states that "the ENGINEERING AND MINING JOURNAL of New York, June 20th, 1885, says, 'Mr. HARTSFELD has won fame as a builder of precious metal furnaces in Europe, and the merits of his present devices have already been recognized in many of our continental countries.'"

We beg to say that this use of our name is wholly unwarranted; for we have no acquaintance with either Mr. HARTSFELD or his furnace, and no such statement ever appeared in the ENGINEERING AND MINING JOURNAL.

ALASKA, the balmy Alaska of Governor SWINEFORD, promises to furnish the next great mining boom. The glowing description of its riches that Governor SWINEFORD gives on another page will doubtless create quite a rush for the "new diggings." Unquestionably, Alaska and British Columbia possess very important gold-fields, and may, very likely, become producers of the precious metal on a scale that will affect the world's supply; but the very interesting letter from which we give extracts, while bearing abundant evidence of its author's sincerity and honesty, yet leads us to doubt his experience and knowledge in gold mining. It is not enough to say that "All is not gold that glitters;" it is equally true that usually only a very small proportion of the quartz in a gold-bearing quartz vein carries gold in paying quantity; although, if the cost of milling gold ores in Alaska is only $1.25 a ton, it would be pretty poor rock that would not be "pay-ore."

THE CAUSE OF THE NANTICOKE MINE DISASTER.

The cause of the accident, by which twenty-six men lost their lives in December last, is stated as follows in the annual report of the Susquehanna Coal Company.

The investigations have fully confirmed the explanation we gave of the cause of this accident in the ENGINEERING AND MINING JOURNAL of January 9th. The report says:

"The nature and cause of the accident have been thoroughly examined and are now well understood, and reveal a local and peculiar cause that no human caution or provision could have been expected to foresee or provide for." Many distinguished experts examined the subject, and are said to agree in the conclusion, which is thus stated:

"Above the anticlinal region of the remote workings in the lower gangway of this opening, about 3000 feet from the foot of the slope, the usual overlying rocks of the measures, undisturbed except by ordinary settlement, lie in place 270 feet in thickness; but in that particular spot and within their mass a local funnel-shaped erosion or 'pot-hole' had occurred, about three hundred feet in diameter at the surface and extending downward to or near the bed of coal. This, at an early geologic period, probably after emergence, had been filled with sand, the chemical identity of which has not yet been ascertained; but as no other sandy deposit is known in the vicinity, we may suppose it to be the result of wind and ice scrapings on the early rock surface before the development of soil. This sandy mass was in a semi-liquid condition, due to the presence of water without means of escape. Over the whole, conformably distributed and effectually concealing the peculiarity, lay, to a depth of about twelve feet, the usual oxidized, weathered, and decomposed rock known as soil. The external exposure of rock, both detached and *in situ*, was homogeneous, and afforded no indication of so remarkable a phenomenon. Although more than two hundred precautionary bore-holes had been sunk in the vicinity to test the integrity of the measures, none of them had struck this spot, which had the external appearance of a high, dry knoll. When the underground workings approached the lower *débouché* of this eroded cavity, the confining pillars burst and the rush of the half-liquid mass instantly occurred."

THE READING REORGANIZATION.

The syndicate plan for the reorganization of the Reading has, at last, been officially made public, and it has not been very well received by business men. It proposes the creation of $100,000,000 of a 4 per cent general mortgage, to be used to take up existing mortgages and liens, and it makes a cash assessment of 2½, 10, and 15 per cent on the holders of different classes of junior securities and stock, giving preferred and common stock for the assessment.

"Pres. F. B. Gowen has issued an official circular warning the stock and bondholders against paying assessments or depositing securities with the Morgan-Welsh syndicate, under the reorganization plan. The circular also contains a plan that is proposed by the Reading Company. Mr. Gowen says that the syndicate plan proposes to confiscate $82,000,000 of securities having a market value of $30,000,000. He argues that, notwithstanding the security-holders are to furnish all the money for reorganization, they are required to surrender the control of the property for five years to a committee of voting trustees, of whom a majority are affiliated with rival companies. The plan, he says is 'unjust and impracticable.'

Mr. Gowen explains his own, which, he says, will be issued officially as soon as the London agent of the company, now in America, can reach England. Mr. Gowen's plan is said to be as follows:

"An issue of $100,000,000 of 70-year 4 per cent new consolidated mortgage bonds, which, after reserving sufficient for car trusts, real estate liens, coal land mortgages, and all issues that can not presently be paid off prior to the general mortgage, will provide for retiring the general mortgage and floating debt.

"An issue (which may be increased, only, however, to take in leased line securities) of cumulative 4 per cent first preference income bonds secured by mortgage

subordinate to the new consolidated mortgage, to retire the income mortgage, convertible adjustment scrip, first series 5s, a proportion of second series 5s, and some of the leased canal securities, and provide for a liberal bonus to be given with such of the new consolidated mortgage bonds as will be issued to retire the general mortgage and floating debt.

"An issue (which may be increased for future wants) of second preference cumulative 4 per cent income bonds secured by mortgage, subordinate to that securing the first preference income bonds, to retire remaining proportion of second series 5s, convertible and debenture bonds and scrip, and some of the canal leased line securities; those issued in respect of the convertible bonds retaining the right of conversion into shares. The preferred stock to remain unchanged and to receive past earned dividends in common shares at par. The common shares and deferred income bonds to remain unchanged. The Central New Jersey property to be retained in friendly alliance, either under modified lease, at rentals equal to earnings under proper management, or under special traffic contract advantageous to both companies. Non-acceptance of the plan by those interested within a time to be specified in the prospectus, will involve exclusion from the benefits of a similar reorganization, which will, in such case, be effected by speedy and amicable foreclosure."

There are many points in the Morgan syndicate plan that show the hand of the Pennsylvania Railroad; and unquestionably, should that plan be adopted, the property, before the expiration of the five years during which it stipulates the control shall be in the hands of trustees, the majority of whom are well known to be affiliated with the Pennsylvania Railroad, would pass directly or indirectly under the control of that great company, and would give it practically the monopoly of the tide-water coal trade.

THE LOWER CALIFORNIA COPPER MINES.

This property recently passed into the hands of the Boleo Company, an organization having a capital of 12,000,000 francs, of which it is said 5,095,000 francs, or, say, $1,000,000, were paid for the property. It is true that this is just about double what the properties were offered for here, and is probably about double what the owners received; but the question we wish to discuss now is not how many times its value the French purchasers paid for it, nor to inquire who pocketed the difference between what the Boleo Company paid and the owners received; but to inquire into the cost at which this company is likely to produce copper, the quantity that it may possibly put upon the market, the effect on the copper market, and, incidentally, the prospect of profit or failure to the Boleo stockholders that have invested in the enterprise.

If some of our conclusions are not altogether satisfactory to the Boleo stockholders, we beg to assure them that the opinions expressed are based upon the reports of a number of distinguished experts who have examined the property, and upon other reliable information, and that they are absolutely disinterested so far as we are concerned. Moreover, it may prove better for these investors to know more than perhaps they now do of their property, before their capital is exhausted.

The Lower California mines are situated in latitude 27° 23′ north, and longitude 112° 35′ west, in the Santa Agueda Mining District, Municipality of Molegé, Central Partido, Baja (Lower) California, Mexico. They lie 50 miles northwest from Molegé on the shores of the Gulf of California, and 90 miles west of Guaymas, the nearest point of railroad communication.

The entire strip of country lying between the Gulf of Mexico and the Virgin Mountains, twenty miles in the interior, may be considered as a plain gradually sloping from an altitude of 2000 feet at the base of the mountains to 200 feet on the cliffs at the seashore. Its surface is covered with loose conglomerate and gravel, and is intersected by numerous cañons, often so close together that the summits of the divided plains are narrower than the intervening cañons.

The altitude of the mines varies from 400 to 200 feet above tide. The climate is not unfavorable, the heat not having been known to exceed 102 degrees Fahr. in the shade, and rarely rising above 90 degrees. It rains only three or four days in the year. Work is carried on everywhere without shelter, and the miners' houses usually consist of an uncemented stone wall, inclosing three sides of a square partly roofed over with a few gunny-sacks. The cañons, rocky slopes, and table lands are studded with scrubby trees and huge cacti. The Palo Blanco and the Palo Verde, the largest of these trees, are used for mining timbers, though really too small to be of use except for lagging. In the immediate vicinity of the mines, the cañons are "dry," but water can be obtained in any of them by digging from 50 to 75 feet. The well at the Hacienda del Boleo, 4500 yards from the sea, is 270 feet deep, and has 48 feet of water. Hoisting 5000 gallons in one day lowered the water-level only one foot.

The copper belt, so far as yet explored, covers a section of country running nearly parallel with the coast for a distance of six or eight miles, and extending three or four miles into the interior. Numerous cañons, from 200 to 700 feet in depth, traverse this belt, and the sections exposed on the sides of the cañon show everywhere the same formation.

The thickness of the beds varies greatly in different places; but none of them is ever wholly missing, neither are their relative positions ever changed. The figures given below represent the average thickness of the different strata. Beginning at the surface and going downward, we find 50 feet of gravel, the boulders and pebbles being composed almost exclusively of volcanic rock; 75 feet of conglomerate; 100 feet of arenaceous marl, yellow at the upper surface, but changing to reddish-yellow on the lower; 5 feet of slaty clay and soapstone carrying copper ore, and known as the "Upper Seam;" 15 feet conglomerate, the cementing material stained dark red by iron oxide; 10 feet whitish-yellow calcareous sandstone; 15 feet dark and light brown sandstone in alternate bands; 60 feet reddish-brown sandstone, showing in places belts five or six feet thick, studded with small pebbles; 8 feet clay and soapstone, carrying copper ore, and known as the "Middle Seam;" 40 feet of conglomerate, the lower portions showing bands of compact sandstone from one to three feet thick; 30 feet gray and drab sandstones; 12 feet compact sandstone, changing from light gray on its upper surface to dark red on the lower; 3 feet compact sandstone, color Indian red, very readily distinguishable at great distances, and giving a key to the position of the other strata; 100 feet of friable sandstone, color pink and gray in alternate bands; 12 feet of clay and kaolin carrying copper ore, and known as the "Lower Seam;" 20 feet of light gray sandstone, in some places so thickly studded with boulders and pebbles as to form a true conglomerate. Trachyte, depth unknown.

Copper was first discovered in the district in the spring of 1868. The mines were not opened until 1871, when work was begun on one of the mines in the Boleo grant. Since 1871, the mines have been worked on a small scale steadily or with a few interruptions, and the ore has been shipped to England by sailing-vessels.

The walls of the cañons are very steep, averaging 32 degrees. From these sloping gravel-covered walls, at intervals of a few hundred yards, hard and nearly vertical bluffs project and expose to view sections of the rocks in position, affording an opportunity to readily determine the geology of the copper-bearing strata. Between the "middle" and "lower" copper seams, there occurs a very distinctly marked belt of compact red sandstone, by means of which it is easy to decide, at any given point, which of the three nearly horizontal copper seams is exposed. They are stratified beds, sloping gradually toward the sea, near a line of trachyte hills that seems to form the western boundary of the mineral belt. At the many places where one of the three copper seams showed rich ore at the outcrop on the sides of the cañons, work was naturally commenced by running tunnels and inclines on the ore. No machinery has ever been used, the ore having been either wheeled out from the tunnels in wheelbarrows or carried from the inclines in "tenatas" (raw-hide sacks supported by a strap passing across the forehead of the Indian carrier).

No attempt has been made to ventilate the mines either by fans or by converting the mine draughts into a continuous current of air connected with an upcast shaft. The levels have been given a downward pitch, to promote ventilation, and most of the ore is extracted by a wasteful and expensive system of mining.

The pay-chutes have a very slight pitch, except near some of the faults. Their general course is northwest and southeast, and in the direction of their length they are very persistent and continuous. Wherever these pay-chutes are cut through by a cañon, ore can be found on both banks at the very outcrop and in boulders in the bed of the cañon below.

The ore-bearing strata are soft ferruginous clay, mixed in many places with oxide of manganese, and, in others, intersected in every direction by small seams of gypsum. The foot-wall, or floor of the different ore-beds, is always conglomerate, although often a few feet of arenaceous clay deeply stained by iron or manganese having occasionally a slaty structure intervene between the ore and the conglomerate. The hanging-wall, or roof, in all the mines is either clay, soapstone, or, more generally, a mixture of both, very damp and very much given to contraction and crumbling when exposed to the air.

The ores embrace every variety, from copper glance to carbonate. Metallic copper in small quantities occurs in one of the mines. Red and black oxides, azurite, lampadite, and chryscolla occur frequently; but malachite, assaying from 15 to 45 per cent in copper, forms the bulk of the ores in all these mines. The principal impurities in the ores are oxide of iron, oxide of manganese, kaolin, clay, silica, soapstone, and gypsum; iron being the most plentiful, and the quantities of the others diminishing in the order in which they are given. Samplings of the rich pay-chute give an average of from 18 to 23 per cent of copper, and of the low-grade belt about 8 to 12 per cent.

Past work on the mines has been all of one general character. From the point where ore was encountered, whether on the surface, at the bottom of a shallow shaft, or at the end of a short incline, a drift was run upon the ore-body as far as the want of ventilation would permit. From such entry inclines, lateral drifts were run as wide as the nature of the roof would permit, and at such intervals as would leave a block of unbroken ground between them only sufficient to act as a pillar for the support of the roof. No regularity in the course of these drifts was attempted, and the miners usually followed the softest ground, so that the old drifts cross each other in every conceivable direction. At no great distance from the entry incline, the air in these lateral drifts (the

only Mexican substitute for stopes) became so hot as to necessitate suspending work on the "topes" (faces). Ore was then taken from the sides of the supporting blocks until the widened roof or weakened pillars showed signs of fracture, when the entire set of workings would be abandoned in favor of some new promising outcrop. As the clay and soapstone composing the roof usually contain from 10 to 20 per cent of water, the contraction caused by the drying of exposed surfaces has caused the roof to "cave in" and the pillars to "shell off" to an extent that entirely prevents exploration of most of the old workings.

The quantity of rich ore, from 18 to 22 per cent, in sight has been estimated at about 75,000 tons, and of low-grade from 8 to 12 per cent, at perhaps 200,000 tons. This ore is not considered of value at present.

Yaqui Indians have been almost exclusively employed in the mines, and have proved a quiet, peaceable, and industrious class. As miners, under most circumstances, they are fully equal to white labor, and when properly watched and directed by intelligent foremen, they perform more and better work than the best white miners for a stated sum of money. Their pay is $1 a day, Mexican money, for miners, and 75 cents for laborers.

Heretofore, the ore has been packed upon mules from the mouth of the inclines to the beach, and thence loaded on ships by means of row-boat lighters, as the water near the coast is too shallow to admit of ships coming within less than 400 yards of the shore. All the ore has been shipped to English markets, no smelting having ever been attempted on the property, although there has always been known to exist a very large amount of ore of too low a grade to ship, and yet sufficiently rich to repay expenses of smelting close at hand.

The total shipments made from these mines are stated by Mr. BRUNTON, one of the experts whose reports we have freely used, at about 25,000 tons of 21 per cent ore. Some of the experts have counted the reserves of rich ore in the mine as averaging 23 per cent copper; but our experience is, that the reserves in a mine are almost invariably of lower grade than the shipments; in other words, that the miners are not in the habit of leaving richer ore than they take; and a Mexican miner is probably the last person we should expect to furnish an exception to this general rule. We believe the assumption of 20 per cent as the average value of the rich ore is altogether fair to the mine and to the experts.

The cost of mining, sorting, transportation to ship, and shipping expenses on this 20 per cent ore are given by the experts' reports at $20 a ton; sea freight to England and expenses there, $15; total, $35 a ton.

Such ore is selling in England at the present time at less than 8s or $1.94 per unit, equal to say $39 per ton—a figure that shows a small margin over the actual operating expenses, which might pay the other expenses of the company. This would, however, make available only the rich ores, which are necessarily in limited quantity. If the average ore of the mine is to be utilized, it must be by smelting near the mine, and the experts unite in recommending this. The company in fact has already ordered three water-jacketed furnaces of the best American type, 33 by 66 inches at tuyeres.

The expert reports give estimates for the cost of smelting ores near the mines. From them, we get average figures, which are about as follows:

Mining and delivering at the furnace, average ore (high and low grade together), $10 to $12 a ton; smelting, $9 a ton; total, say $20 a ton. And if we assume the average yield of the ore to be 10 per cent, which the evidence before us shows to be liberal, then the cost of producing a ton of copper bars would be about $200, and freights to England, commissions, insurance, interest, etc., say $24 a ton; total, $224 a ton, or 10 cents a pound, or about £46 a ton in England; and this allows nothing for the company's general expenses. In January last, the average price of Chili Bars was £40, and in February £41. A comparison of these figures can not be very encouraging to the Boleo stockholders.

If only selected ore be smelted, it is true the cost per ton of bars would be reduced, but the cost of selected ore is much higher than that of average ore, and the supply is limited; and moreover, estimates of permanent results should be made on average ores and the present low state of the market. Though the figures we have given are all based upon the reports of distinguished experts, they are not the exact figures given by any one expert. They are, however, we believe, fair and just to the property and the engineers.

These estimates of the experts are of course based upon skill, experience, and economy in the management at the mines. If the reports that we get from reliable sources are well founded, none of these essentials is apparent to any great degree in the present administration. We do not pretend to estimate the value of this deficiency on the cost per ton of bars.

The problem is an interesting one. We have here a property that, under Mexican methods, and under high prices for copper, in the past has been very remunerative. It is now to be developed and operated by the Boleo Company, with all the advantages that modern skill and capital can afford. Situated in a country so dry, barren, and sparsely populated that political disturbances are impossible, depending upon the outside world for every thing consumed, and yet lying within four miles of tide-water, these mines will undoubtedly afford a most interesting opportunity for observing the contrasted results of native Mexican mining in Mexico, on the one hand, and, on the other, of European systems applied to conditions of Mexican mines.

CORRESPONDENCE.

[We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.]

Notes on the Formation of Siliceous Slags.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In the treatise on Lead Slags, published in your issues of the 6th and 13th inst., the following statement is made:

"If the percentage of silica is low, alumina plays the *rôle* of an acid, and hence increases the fusibility; if, however, the percentage of silica is high, then alumina acts as a base, and hence lowers the fusing-point of the charge."

In his concluding sentences, on governing the losses of both lead and silver, in lead smelting, the author further states:

"To say that there should be a certain ratio existing between the silica and the bases does not solve the problem."

As long as the action of alumina is so vaguely defined as in the first-named quotation, it must be rather difficult to establish a *certain* oxygen ratio, and without *that* it is impossible to arrive at rational formulas on the interchangeability of the fluxes.

The changes of rapidly cooled slag, that is, greater fusibility of that slag that is not allowed to devitrify, and the entire solubility of such slags in hydrochloric acid (always provided that they have a certain oxygen ratio) may not have been recorded heretofore in the practice of lead smelting, but are of rather ancient record in other industries. I have found that the solution of knotty problems in one branch of metallurgic practice can frequently be furthered by looking for analogous conditions in other processes, and, with this end in view, would suggest that the behavior of alumina in cement-burning presents many remarkable phenomena that may lead to a better understanding of its behavior in smelting operations. I merely quote the following: "The sesquioxide of iron exhibits properties analogous to those of alumina, and will consequently be present as *calcium ferrate*, if the cement has not been overburnt; at a higher temperature, however, the affinity of silica for iron is increased, and ferrous silicate is formed by the change of oxide into protoxide; this transition is accompanied by a change of color from *green* to blue."

Some of the alumina in cement-clinkers comes from calcium aluminates in the limestone or chalk, but most of it from aluminium silicates or clays, and scarcely any from the ashes of the fuel; its combinations are, therefore, similar to, but less complex than, those that obtain in smelting iron ores.

If these clinkers have the average composition of good Portland cement, and are melted at a full white heat, subsilicates will be formed that are similar to the basic slags of some iron furnaces; if such fluid slags are kept in an intense heat for from six to eight hours, they will remain homogeneous subsilicates after rapid cooling; but if they are allowed to cool after having scarcely become fluid, they are liable to fall apart into calcium subsilicates and calcium aluminates. I think that many of the physical and analytical observations that are recited but not accounted for in "lead slags" could be easily explained by starting from the hypothesis that *alumina is always acid in lower, and basic in higher, smelting temperatures; but that it takes more silica to render alumina basic in a lower heat, and a longer and higher heat to do so with less of silica.* If this is admitted, then the quantitative properties of alumina within a certain ratio of acids to bases may also be defined. Respectfully, A. D. E.

HOBOKEN, March 18.

How the Western Coal Trade is Managed.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: As spring is now so close at hand (it is snowing fircely, and as I write, I note the passers by turn their coat-collars closely over their tingling ears), we begin to plan our campaign for the coming season. We always work on a plan out here. We are great on plans. Last year, we had one that was just a little beauty. You eloquen ly described it as "warranted not to rip, ravel, or run down in the heel." It was felt that, whereas all other plans had come to grief, this was a panacea for all our woes, and we were happy. Some, indeed, felt that we might as well declare our dividends right then, when the plan was adopted, and skip 1885 as a sure thing. We might as well have done so. As the season advanced a little, we began to wonder what was wrong. The plan was all right, but there seemed to be a hitch. The season passed, and so did our profits, and that plan has gone the way of all the others; but, bless you! we will get up another, and we will have a meeting, and venerable Mr. A—— will say, "Now boys, this is the last agreement I will ever sign if this is not lived up to;" and our silver-tongued orator will tell us he is as bad as the rest ("which nobody can deny"); but there MUST be a change or he will spank somebody. And the delegate from Jerusalem will state that he is instructed by his company to WITHDRAW, and Brock will say his firm will go it alone, and very likely a rope of sand will get uncoiled; in fact, the venerable old chestnuts will be a foot deep on the floor.

What a queer thing is this management of the coal trade! Here we have a demand for over thirty millions of tons, quite enough to give all a good business at good profits on a legitimate basis; but what do we find? I give up any attempt to describe the present condition of affairs.

As great a disturbing element, and probably the greatest we have, is the corrupt use of official power by railroad officers. One of the great companies farms out its coal business to two or three concerns, and compels its operators to sell their coal to these firms. The public believes

that between these firms and the higher officials the motto of addition, division, and silence is in force. On another great railroad, petty officials handle the coal on commission, and grow suddenly rich, and deface our avenues with monstrosities. Our trunk lines select a few favorites who get inside rates and divide. And so it goes.

The trouble in soft coal is largely owing to the gullibility of the public in the matter of railroad bonds. We have two coal roads terminating here, whose only aim of late years has been to sell bonds. One is in control of parties who probably never put a dollar of their own money into it except possibly for a few days, and who have succeeded in floating millions and millions upon a confiding public, which seems ready to absorb any thing that bears the name of a railroad bond. In order to do this, it has employed its agents to sell coal at any price, to make tonnage and newspaper reports. Of course, it soon collapsed, but that is a small matter nowadays, and only marks a necessary stage that must be reached before a new deluge of bonds can be launched. The other road is in control of parties that are not so dazzlingly reckless in their management; in fact, as far as handling the business of their road is concerned, they seem bewildered by their opponent's tactics; but when it comes to issuing bonds, they are to the front every time, and are now offering to the public fifty or sixty millions on a property not earning interest on five. Meanwhile coal is cheap.

I see the trunk lines are accusing the Lackawanna of securing general freight business in some peculiar way they can not understand. If that company handles its freight business as it does coal, the other trunk lines will find the Lackawanna *very difficult* to understand; and if they can be as easily bulldozed as the coal roads, we had better load up with Delaware, Lackawanna & Western stock. Possibly Sloan will find different metal in control of the trunk lines.

Since writing the foregoing, I learn that the Presidents have met in the parlors of a Wall street banker, and that a combination has been agreed upon for 1886. Exit War, and enter Peace, followed by a clamorous mob of coal buyers howling for coal at big prices *possibly!*

BUFFALO, March 24, 1886. OCCASIONAL.

ENGLISH IRON AND STEEL TRADE STATISTICS.

Production.—The British Iron Trade Association has published the following provisional returns of the production of pig-iron in 1885: The total quantity of pig-iron produced in the United Kingdom in 1885 was 7,250,657 tons, as compared with 7,528,966 tons in 1884; the decrease thus amounting to 278,309 tons, or 3·5 per cent. In 1884, the production of pig-iron was 961,258 tons, or 11 per cent under the quantity made in the previous year. The decrease in 1885 has not, therefore, been nearly so great as in the previous twelve months. Of the fifteen districts into which the country is divided for iron-making purposes, four have increased and eleven have decreased their production of pig-iron in 1885.

Stocks.—On December 31st, 1885, the total quantity of pig-iron in stock in makers' hands, and in warrant and other stores throughout the country, amounted to 2,352,169 tons, as compared with 1,809,467 tons at the end of 1884. There has, therefore, been an increase of 542,702 tons.

Bessemer Steel Production—Ingots.—The following provisional returns have been issued by the British Iron Trade Association: The total production of Bessemer steel ingots in 1885 was 1,247,001 tons, which is a decrease of 52,675 tons on the production of the previous year. The decrease is only about one fifth of that which took place during 1884, when the total make of ingots was 1,299,676 tons, or 253,704 tons under the production of 1883. During the year 1885, there was a diminished make in every leading steel-making district of the country except South Wales, where the output of Bessemer ingots was 15,386 tons more than in 1884. There has also been an increase in Scotland, where no Bessemer steel had been made for many years prior to 1885, but the quantity so produced was very inconsiderable, being under 5000 tons.

Steel Rails.—The production of the United Kingdom in 1885 was 671,583 tons, as compared with 784,968 tons in 1884, and 1,097,174 tons in 1883, and 1,235,785 tons in 1882.

Other Bessemer steel products in 1885: Plate and angles, 55,444 tons; sleepers, railroad ties, 34,548 tons; tin plate bars, 23,110 tons; blooms for sale, 60,170 tons; billets for sale, 153,588 tons; forgings, 19,280 tons.

OFFICIAL STATEMENTS AND REPORTS.

The Franklin Mining Company, Mich.

This company does not make its reports in the clear and satisfactory manner of some of its neighbors, and we confess we are not able to "figure out" the results stated from the data given.

The mine work was as follows: Sunk in shafts, 543 feet; in winzes, 247 feet; drifted, 2924 feet; total, 3714 feet. The fathoms of ground broken, openings included, are 9751·824.

There are in the mine, broken and ready for hoisting, 25,000 tons of rock, not valued as an asset.

During the year, 137,276 tons of rock were treated at the mill, a gain over 1884 of 8394 tons, producing 4,812,565 pounds of mineral, which gave a yield of 83·13 per cent of refined copper, or 3,999,172 pounds, being a gain over 1884 of 250,520 pounds of refined copper.

The amount of mineral per ton of rock was 1·75, or ·03 per cent less than 1884.

The total cost of mining and manipulating per ton of rock hoisted was $1.95, or 27 cents a ton less than 1884.

Total amount of rock hoisted, 173,616 tons—a gain over 1884 of 12,549 tons.

The mill is 7200 feet distant from the mine.

The superintendent, Capt. J. Vivian, says: "No. 2 shaft has been sunk from the 26th to the 27th level. No. 3 shaft has been sunk from the 24th to the 26th level; and No. 5 from the 23d to within a few feet of the 25th level. The lode exposed in these openings seems to show about the same amount of copper as heretofore. The openings, by drifts from the above-mentioned shafts, have been made from the 18th to the 27th level, with the same regularity as in past years, and the general appearance of the lode exposed seems to be as productive as at any time during the past few years."

Yield in 1881, 2,667,952 pounds refined copper.
Yield in 1882, 3,264,120 pounds refined copper.
Yield in 1883, 3,489,308 pounds refined copper.
Yield in 1884, 3,748,652 pounds refined copper.
Yield in 1885, 3,999,172 pounds refined copper.

We give herewith, the cash account, receipts, and expenditures, and assets and liabilities of the Franklin Company. From the data given above and those contained in these accounts, we arrive at the following conclusions:

The ore milled yielded 29·13 pounds of fine copper to the ton, which, at the average value stated, 11·044 cents a pound, equals $3.21 per ton milled. To this has to be added about one cent a ton for silver saved.

The expenditures at the mine, and smelting and other expenditures, amount to $2.92 per ton milled; the apparent profit is therefore about 30 cents a ton.

The company's report for 1884 gave in the list of assets 1,906,521 pounds of copper on hand January 1st, 1885, valued at 10·6 cents a pound. The production of copper in 1885 was 3,999,172 pounds, making the total supply, 5,905,693 pounds. Now the following table of receipts and expenditures says the company has sold 3,291,806 + 707,366 = 3,979,172 pounds, which would leave on hand, unsold, 1,926,521 pounds; yet there is no copper on hand given in the assets.

The cash account, differing from the receipts and expenditures account, says that there were "sales of copper, 5,398,327 pounds," which, though 1,419,155 pounds more than stated in the receipts, still leaves 507,366 pounds to be accounted for. In one case, the value of the item to be accounted for would be only about $58,347; in the other case, about $221,550.

We suppose, of course, that there is a satisfactory explanation of this discrepancy; but accounts should be so specific and clear that they will at least "add up" right, and not call for explanation or supplementary statements.

CASH ACCOUNT FOR YEAR ENDED DECEMBER 31ST, 1885.

Cash on hand January 1st, 1885	$24.138.79
Received from sales of copper, 5,398,327 pounds at 11·044	595,962.16
Received from sale silver	1,511.81
Sale supplies	189.14
Interest	795.59
Loans	57,000.00
	$679,597.49

Contra.

Cash paid dividend July 1st, 1885	$40,000.00
" account November 11th, 1872	2.00
Loans	102,000.00
Mine agent's drafts	323,037.91
Interest	752.26
Insurance	1,299.53
Storage	1,635.43
Smelting	41,537.15
Freight	10,376 51
Expense, brokerage, taxes, etc	9,173 73
Cash on hand December 31st, 1885	149,782.97
	$679,597.49

RECEIPTS AND EXPENDITURES FOR THE YEAR 1885.

Receipts.

Sales of 3,291,806 pounds copper sold, averaging 11·044	$363,547.05
707,366 pounds on hand (sold at 11½c.)	81,347.09
Sales of silver	1,511.81
Sales of supplies	189.14
Received for interest account	795.59
	$447,390.68

Expenditures.

At mine, as by yearly cost sheet	$338,995.99
All other expenses, smelting, freight, insurance, etc., etc	62,134.12
Profit and loss. *Profit for* 1885	46,260.57
	$447,390.68

Highest price in 1885, 11½ cents.
Lowest " " 9·80 cents.

ASSETS AND LIABILITIES JANUARY 1ST, 1886.

Assets.

707.366 pounds copper sold 11½c.	$81.347.09	
Cash on hand	149,782 97	
Supplies at mine	78.947.06	
Received sales of silver	1.113.47	$311,19.059

Liabilities.

Drafts accepted and in transit	$30,686.39	
Liabilities at mines	29,747.75	
Due for smelting and freight	11,384.21	71,818.35
		$239,372.24
From which deduct dividend, Sanuary 1st, 1886.		40,000.00
Balance assets January 1st, 1886		$199,372.24

D. L. DEMMON, Treasurer.

The Production of Gold in Victoria.—In anticipation of the official report of the gold production of Victoria, the Melbourne *Argus* gives an estimate based upon the receipts of the metal at the mint and the quantity exported. Thus framed, the estimate is:

Year 1885.

	Ounces.
Victorian gold received at mint	737,660
Returned or resold to banks for export	87,623
Total minted	650,037
Gold exported	87,610
Amount held by the mint and by banks on December 31st, 1885, in excess of amount held on December 31st, 1884	46,023
Net yield for 1885	783,670

This total is slightly in excess of that for 1884, which was a good deal in excess of the yield in 1883; but it is much below that of the three years 1880–82.

THE MANUFACTURE OF SPIEGEL FROM FRANKLINITE RESIDUUM.

Written for the Engineering and Mining Journal by George C. Stone, Engineer of the New Jersey Zinc Company.

(*Continued from page* 209.)

The New B Furnace.—The new "B" furnace, Fig, 5, was blown in October 8th, 1883. It is 30 feet high to the top of the brick-work (stock line), 6 feet in diameter at the throat, 8 feet at the bosh, 5 feet at the tuyeres, and 4 feet 6 inches at the bottom of the hearth. The bell is 3 feet 3 inches in diameter. It has 5 tuyeres 2¾ inches and one (over the tap-hole) 2 inches in diameter. It has water-cooled cast-iron plates at the tuyeres, tap-hole. and cinder notch, and a wrought-iron jacket, cooled with spray-pipes from just above the tuyeres to the mantel. Below the tuyeres, there is a wrought-iron jacket about 3 inches from the brick-work, with the intermediate space filled with chips of fire-brick. The walls from just above the tuyeres to the throat are only 14 inches thick. Our subsequent experience with "A" has shown that it would have been better if we had made them thicker. The first blast lasted 453 days. During that time, it was stopped 6 days 15¾ hours to clean out. The average make of iron per day was 8 tons 927 pounds, averaging 20·74 per cent of manganese ; 0·05 per cent of the iron was scrap, 0·66 per cent was 10 to 12 per cent spiegel, 9·46 per cent was 17 to 19 per cent spiegel, and 89·83 per cent was 20 per cent spiegel. For the five months from December 1st, 1883, to May 1st, 1884, the furnace made less than ten tons of 17 to 19 per cent spiegeleisen, all the rest being 20 per cent. The fuel consumed was ·04 ton boiler coal and 2·637 tons broken coal per ton of iron. The coal unit was 900 pounds ; the usual charge was 900 pounds coal, 1060 to 1100 pounds clinker, and from 250 to 260 pounds limestone (Sing Sing). The furnace worked well up to the last day. We stopped one morning to clean out, started at about the usual time, but the charge did not settle, and never moved again. After working over it and trying every thing but explosives (which the officers of the company would not allow), we shoveled out, and found that the charge was covered and saturated with zinc. The walls were clean, with no sign of a scaffold, but the stock was so cemented together with zinc that the blast could not get through. We found the walls had cut away very evenly. A horizontal section at any point would have been almost a circle with walls of nearly equal thickness on all sides. The thinnest place was at the mantel, where there was less than one inch of fire-brick left.

The second blast of this furnace was short, only lasting 82 days. It was brought to an end by the breaking of a hoist-rope, which necessitated a stop of thirty-four hours, during which time the zinc in the charge chilled, and necessitated shoveling out. On this blast, I tried a larger coal unit for a time, but it did not appear to work as well, and was given up. The heaviest charge was 1000 coal, 1200 clinker, 320 limestone. The clinker used on this blast was the leanest and most siliceous we have ever had. After repairing the hearth walls, we blew in again in July, 1885. The furnace now (January, 1886) is doing better than ever, working a charge of 900 coal, 1200 clinker, 275 limestone, and making from eight to nine tons a day, most of it being twenty per cent.

The new "A" is by far the best furnace we have ever had. It makes more iron, carries a heavier burden, and is less troubled by the unavoidable stops than any of the others. It is 31 feet high to the stock-line, 6 feet 6 inches diameter at the throat, 8 feet at the bosh, and 5 feet 3 inches at the tuyeres. The bell is 3 feet 4 inches in diameter. There are five 3-inch and one 2¼-inch tuyeres. The walls are 21 inches thick up to the tuyeres, 16 inches on the bosh, 24 inches for the first ten feet above the mantel, diminishing to 16 inches at the throat. The increased thickness of the walls, by preventing loss of heat by radiation, is, I think, one of the principal reasons of the better working of this furnace. From one foot below the hearth to fourteen inches below the tuyeres, and at the tuyeres and cinder notch, the furnace has cast-iron water-jackets. From fourteen inches above the tuyeres to the mantel, there is a wrought-iron bosh-jacket with sprinkling-pipes. The coal unit is 900 pounds, the same as at "B." The present charge is 900 coal, 1275 clinker, 300 limestone—the largest charge that has ever been worked by a furnace using this material, to my knowledge. The furnace did not get fairly in working order for the first three months of the blast. For the first six months of the blast, the average make was 8 tons 415 pounds of iron with 20·36 per cent of manganese, requiring ·029 ton of boiler coal and 2 614 tons of broken coal to the ton of iron ; 19·54 per cent of the iron was 17 to 19 per cent spiegel, 79·93 per cent was 20 per cent spiegel, the remainder, 0·53 per cent, was of lower grades. For the second three months, the furnace made 9 tons 1416 pounds a day with 20·20 per cent manganese ; more than three fourths of the iron was 20 per cent spiegel, the remainder 17 to 19 per cent spiegel. It took ·019 ton of boiler coal and 2·368 tons of broken coal to the ton of iron. For the past month, the make has been over 10 tons 1500 pounds a day, requiring less than 2·2 tons of coal to the ton of iron.

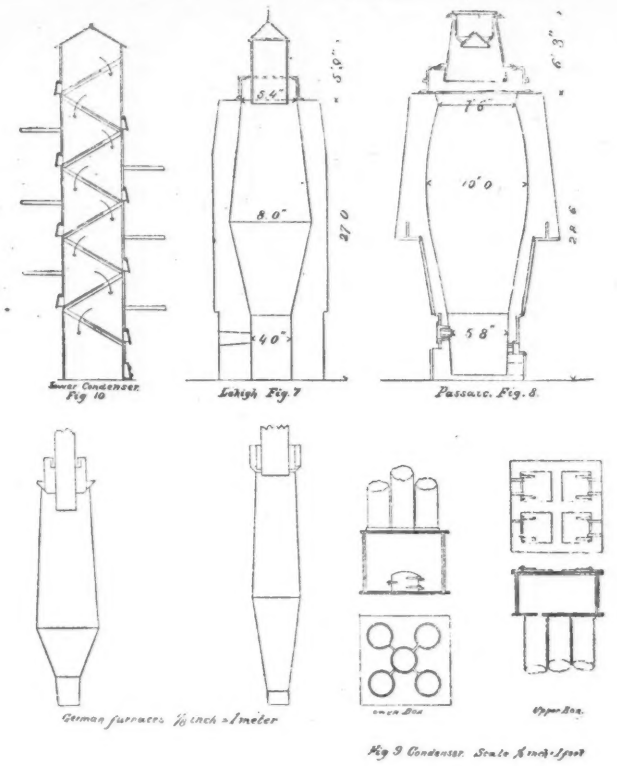
Zinc Fume and Flue-Dust.—The zinc in the ore is the great trouble ; it necessitates a peculiar construction of the furnace tops and an elaborate system of gas-flues and condensers, or dust-catchers, and entails a great loss of time and much labor in cleaning them and the ovens and boiler settings. With the open-top furnaces, the zinc seldom got hard on the walls ; but in the larger closed-top furnaces, it is harder than most stone and nearly as heavy as iron. We do not collect as much oxide per ton of iron made from the new furnaces ; but it is much richer in zinc, as the following analyses show :

	I.	II.	III.	IV.	V.
SiO_2	5·73	4·48	3·06	4·46	7·66
Fe_2O_3 and Al_2O_3	1·49	1·92	2·18	3·50	2·94
MnO	3·92	4·32	4·03	4·66	10·08
CaO	not det.	not det.	1·18	1·50	....
MgO	trace	trace	1·07	1·39	....
ZnO	76·48	73·65	84·50	79·54	63·08
Zn	61·37	59·10	67·81	63·83	50·62

I. and II. are from the gas-flues and condensers of the open-topped furnaces. III. is from the flues and condensers of the new "A." IV. is from the flues and condensers of the new "B." V. is light oxide from the ovens at "A."

The oxide varies in richness in the different parts of the gas-flues and condensers. The richest is found at the burners of the ovens, where it contains metallic zinc, samples running as high as 83 per cent of metallic zinc (pure oxide contains 80·25 per cent). The oxide is used to make spelter, producing a metal of exceptional purity, perfectly free from arsenic, antimony, and lead, and but a few hundredths of a per cent of iron.

The Furnace Tops.—I can not say what style of tops the first furnaces had, as all the old drawings have disappeared. All the furnaces had tops like Fig. 1 when I first came to the works. The entire top castings rested on a foundation ring, which rested on the lining. On this ring, were six uprights, on which rested a second ring that supported the charging-cylinder, which was made in two sections. Between two pairs of the uprights, were the gas-flue openings, each two feet square. The remainder of the openings between the uprights were closed by curved



cast-iron doors held in place by keys fitting in the lugs shown on the uprights. These doors were opened to clean out the oxide that collected between the cylinder and walls. The Lehigh and Passaic companies' furnaces have tops similar to this, except that at the Lehigh furnace the top of the cylinder is closed by two hinged covers, and at the Passaic by a bell and hopper.

Fig. 2 shows the top of the first closed-top furnace, "B." The general arrangement is the same, except that the hopper hangs in place of the lower section of the charging-cylinder. In this furnace, the foundation ring for the top castings rests on brackets bolted to the shell instead of resting directly on the brick-work. This arrangement admits of relining the furnace without removing the top castings. The upper bell and hopper, shown in dotted lines, are a new arrangement we are now making.

The top of furnace "A," Fig. 3, is quite a different arrangement. The foundation ring is much wider, being prolonged to form brackets, which rest on an angle iron riveted to the inside of the shell. This ring is much deeper than the others, to better protect the brick-work ; our experience with furnace "B" having shown that, with the closed-top furnaces, the oxide on the throat was so much harder that it was difficult to remove it without injuring the brick. The cleaning-doors at "A" are hinged at the top and opened by chains passing over pulleys on the charging-floor. This top has proved much more satisfactory than either of the others, as it makes it much easier to clean out the throat and remove the oxide. Both "A" and "B" have but one gas outlet, each two feet by two feet six inches.

The gas passes from the furnaces to the condensers through rectangular cast-iron flues with loose covers, which are lifted off to allow of shoveling out the oxide.

Condensers.—The condensers in use at all the furnaces consist essentially of a series of boxes connected by sets of pipes. Wet scrubbers have been tried, but have not been successful. The first condensers used were brick chambers covered by iron plates, from which sheet-iron pipes led to cast-iron boxes carried on uprights. The brick chambers were continually being blown to pieces by the numerous gas explosions, and were finally replaced by cast-iron boxes. The condensers we use at present, Fig. 9, consist of a lower cast-iron box, four feet square and three feet high inside, provided with a cleaning-door, connected by five sheet-iron pipes thirteen inches in diameter, with a second cast-iron box, four feet square and two feet high, with four square cleaning-doors in the top. These doors are hinged, so that when they are blown open they drop back in place of themselves. Our condensers are built in sets of four, two sets to each furnace. The gas passes alternately down and up through them. The connecting pipes are from ten to twenty feet long. The short ones appear to be quite as effective as the long ones. At furnace "A," we have one condenser, Fig. 10, of a different style. It is a rectangular iron tower thirty-two feet high, four feet by six feet in cross-section, with inclined shelves reaching nearly across it, with explosion-doors, which also serve for cleaning, at each shelf. This condenser is much more effective than the others, but it is much more expensive.

The Lehigh Company uses six condensers like ours. The Passaic Com-

pany uses much larger condensers, eight in each set, nine pipes in each condenser. The condensers have round cleaning-holes over each pipe. The lids closing these holes are chained to the top of the condenser, and have to be replaced by hand when they blow off.

It is necessary, when building these condensers, to provide plenty of explosion-doors, and to arrange so that no large body of gas can explode at once in a long straight line. The neglect of this latter precaution nearly got us in trouble with the tower condenser (when blowing in furnace "A"), at the bottom of which, where it connects with the next of the series, there is a space about 5 feet by 4 feet by 10 feet. In this, the gas exploded with great violence, blowing off a piece of one of the sides about ten feet high and six feet wide, shearing the bolts and rivets (about 120 ⅞-inch diameter) without hurting the sheet. There was no explosion-door at either *end* of the gas space, although there were two at one *side*, which, unfortunately, did not give enough relief. We repaired damages, and have since managed to escape any bad explosions by carefully coaxing the gas past this point whenever we start.

Cinder.—The usual cinder is very nearly a singulo-silicate. Exactly what is the best composition is rather difficult to determine. One would suppose, as indeed has frequently been stated, that the more lime and magnesia, provided the cinder remains sufficiently fusible, the less manganese it would contain. I have found this to be true only if the alumina is low. If the silica is low and the lime and alumina high, the manganese will be high and the cinder look acid. Something similar has been noticed with lead slags, which are also singulo-silicates. It has been recommended to make a cinder in which the oxygen of the bases, exclusive of MnO, equals or exceeds the oxygen in the silica. This answers well if the alumina can be kept low; otherwise, it is better to have less lime. Unfortunately, our cinder usually contains so much alumina that it is impossible for us to make it as basic as is desirable. My practice has been to calculate a cinder in which the oxygen of all the bases, including MnO, equals the oxygen of the silica, assuming that half the manganese in the clinker will go to the cinder. This is about the proportion that is lost at present. Formerly, as much as sixty per cent was frequently lost. Occasionally, we have reduced the loss to forty per cent. It does not pay us to attempt to save more than about fifty per cent of the manganese, because, in order to do it, we have to use a much lighter burden and run slower, which increase the cost, while the resulting spiegel is not enough richer to bring a higher price. Working with a very light burden to try and save more manganese is apt to make siliceous iron, which is difficult to sell. On one occasion, with very poor clinker, we made some twenty per cent spiegel, with nearly four per cent of silicon.

Good cinder usually has a flat or convex surface, is of a light green or brown color, has a light stripe down the center of the run, is very fluid when hot and brittle when cold. Poor cinder has a flat or concave surface, is dark green or black, has dark stripes, and is usually tough when cold, and frequently has a vitreous fracture.

The following are some analyses of our cinder:

	1	2	3	4	5	6	7	8	9
SiO	34·66	33·72	33·68	32·60	37·48	36·64	36·80	38·78	33·58
FeO	2·43	3·38	0·68	2·85	1·68	1·78	1·54	2·57	1·20
Al_2O	8·87	8·63	13·00	13·06	9·12	12·08	9·08	13·30	9·88
MnO	15·44	15·45	15·89	13·07	12·99	9·54	9·62	10·45	7·62
CaO	29·66	30·17	30·38	30·58	23·88	28·40	28·08	24·30	35·47
MgO	8·46	8·56	6·27	6·54	13·74	11·12	13·92	11·78	11·19
Total	99·52	99·91	99·90	98·70	98·89	99·56	99·04	101·18	98·94*
Mn	11·96	11·96	12·30	10·12	10·06	7·39	7·45	8·09	5·90

Nos. 1, 2, and 3 are from the old open-topped furnaces; 4, 5, 6, 7, and 8 are from the new furnaces; 9 is Passaic cinder; it is much more basic and contains less manganese. No. 4 shows the effect of high alumina and lime with low silica. No. 5 is rather too acid. Nos. 6 and 7 are good. No. 8 is high in alumina and silica, but is still a good cinder.

I am inclined to think that, relatively, too much importance has been attached to the composition of the cinder in what has been written on the manufacture of spiegel. At least, with the raw material we have to use, the proper burden is a more important factor than the composition of the charge; for, while the cinder may vary quite largely in composition without greatly affecting the quality of the product, a very small variation in the burden will either greatly diminish the output, and be apt to scaffold the furnace, or it will make siliceous iron and fill up the hearth with kish. The furnaces do best when driven up to their full capacity, with the heaviest burden the composition of the clinker will allow. Of course, hard driving necessitates close watching and frequent analyses, as the smallness of the furnaces and the necessity of making frequent stops make the furnaces particularly liable to derangement of working.

The material we have to work with is about the worst that is used anywhere. The large amount of zinc necessitates the use of small furnaces, which, with the leanness of the clinker—the average yield is only about thirty-three per cent—makes the labor to the ton of product very high. About sixteen per cent of the charge is coal ash, and the charge is so lean that over one per cent of the spiegel comes from the ash of the fuel. We have to handle about ten tons of material, much of it twice, for every ton of iron made. We make about two and a half tons of cinder to the ton of iron.

(TO BE CONCLUDED.)

Lead-Poisoning by Household Utensils.—The German Parliament has now under consideration a bill that is intended to regulate the employment of lead in the manufacture of cooking and other domestic utensils, and so to diminish the risk of poisoning by that metal. The provisions of this measure forbid the use of vessels containing more than ten per cent of lead in their composition for the above purposes. No alloy with over one per cent may be used in coating iron articles used in cookery. Solder may consist of lead to one tenth of its amount, but no more. Enamels into which lead enters are treated with equal stringency. The effect of this bill, if it be passed, will be to obliterate the legal existence of pewter and of soft solder as at present made, since these alloys contain from one half to one fourth of their weight of lead.

* This cinder contained 0·19 per cent. of oxide of zinc, the only time I have ever known zinc to be found in the cinder.

ALASKA, THE GREATEST GOLD DISTRICT IN AMERICA.

Governor Swineford, in a letter to his *Marquette Mining Journal*, gives much interesting and useful information about what he says is the greatest gold mine in the world, and what he thinks is the greatest gold field in America.

Governor Swineford is familiar with the great copper mines of Lake Superior; but his letter, able and interesting as it is, leaves one with the impression that his knowledge of gold veins is limited, and that he probably exaggerates both the extent and richness of the paying veins.

We make the following extracts from Governor Swineford's description of the

DISCOVERY OF GOLD NEAR JUNEAU.

In July, 1880, George E. Pilz, Superintendent for the Alaska Gold and Silver Mining Company, then operating what was known as the Stewart mine, near Silver Bay, Baranoff Island, entered into an agreement with the Hall Brothers, of San Francisco, to send out parties to prospect for gold on the main-land. Four different parties returned unsuccessful; the fifth, consisting of Mr. Richard T. Harris and one Joe Juneau, left Sitka on the 19th of July, 1880, and after many unsuccessful excursions finally found gold in paying quantities on Salmon or Gold Creek. They collected a quantity of gold-bearing quartz, panned out some gold-dust, and then sailed for Sitka to report to and consult with their employer. On examination of the quartz and dust, Pilz outfitted the party a second time with orders to continue their explorations, and stake off for the Hall Brothers and himself claims on such ledges as he (Harris) might consider valuable, the agreement being that Harris and Juneau might take the extension on each of the quartz lodes and locate for themselves all the placer or gravel deposits they might find. Returning to Gold Creek, they prospected farther up and found gold in paying quantities, and also a belt of gold-bearing quartz lodes. They also found one gulch, which Harris named Quartz Gulch, for the reason that it was literally paved with float quartz, in nearly every piece of which gold was visible to the naked eye—all of the kind known as coarse, heavy gold. They then prospected the gravel deposits and found from five to twenty cents to the pan. After staking off the several claims as agreed, they made, as is customary, a code of local laws, and established the boundary lines of a mining district, which they named in honor of Mr. Harris, the original discoverer. A town plat was also staked off at the mouth of the creek, and given the name of Harrisburg (now Juneau), Mr. Harris, as the first mining recorder for the district, having in the mean time recorded all the claims. The party then returned to Sitka, taking with them half a ton of the richest quartz, picked specimens, some of which assayed as high as $30,000 to the ton.

STRIKING IT RICH AT SILVER BOW BASIN.

The regular gold belt at Silver Bow Basin, which is about three miles up Gold Creek, east from Juneau, is about half a mile in width, and the lodes range from four to thirty feet between walls, their trend being from southeast to northwest, and the outcrop showing in some places for nearly a mile in continuous length. The principal formation is slate and a basaltic trap. The assays of rock from these lodes range from $65, the lowest, away up into the thousands of dollars per ton. The quartz is of the variety known to miners as rose-colored in some of the lodes, and in the others it is largely associated with galena, every specimen of the latter I have seen showing free gold to the naked eye.

During the past five years, the placer mines of Silver Bow Basin have averaged $16 a day to the man employed, though in some of them the miners have taken out as much as $80 a day each during the season.

These mines are at an elevation of 2000 feet above tide-water, where the snow falls early and to a considerable depth; the mining season is necessarily short, opening about the middle of May and closing the last of October. Placer mines, however, are never permanent, being, as they are, simply beds of auriferous gravel, or decomposed quartz, found in the drift lying over or adjacent to the gold-bearing lodes or ledges, and those of the Silver Bow Basin are, consequently, rapidly being exhausted. Two or three years at most will suffice to work them all out, and as one after another "reaches bed-rock," the placer miner will be compelled to turn his attention to the quartz lodes, many of which have been revealed in carrying on the work of surface mining, or else go prospecting up and down the coast for other places. From conversation with Mr. Harris and other experienced miners and prospectors, I am led to the belief that plenty of good placer mines will be found up and down the Alaskan coast for a distance of a thousand miles or more. In contradiction to my first impressions, I am told by these same pioneers that the country is a very easy one to prospect. Some of the best claims in the Silver Bow Basin are in litigation between rival claimants. A tunnel is, nevertheless, driving into the mountain side, with the view of cutting all the lodes several hundred feet below the outcrops.

The lodes are rich beyond all precedent, and when once fairly developed, the mines of Silver Bow Basin may be depended upon for an annual bullion product running way up into the millions. These mines must not be confounded with the Alaska Mill and Mining Company's great mine on Douglas Island, about three miles distant in an opposite direction from Juneau. Douglas Island is a body of land about twenty miles long and seven or eight miles wide, lying between Gastineaux Channel on the east and north, and Stephens's Passage on the west and south, these two bodies of water uniting at its northwest and southeast extremities. It is fairly well timbered with spruce, hemlock, and alder, of sufficient size and quantity to furnish all the timber that is likely to be required in the mines, and a large amount of fuel as well. The gold belt has a trend from southeast to northwest, and, so far as known, skirts closely along the coast bordering on Gastineaux Channel, having been found and prospected to a greater or lesser extent over a continuous length of about eight miles. About midway of the belt, as thus far explored, are situated the mine and mill of the Alaska Mill and Mining Company, to which I paid a second visit of inspection only a few days ago. I was courteously shown through both the mine and mill by Mr. John Treadwell, who is part owner and superintendent. I found nothing on the occasion of my last visit to justify the least qualification of my already expressed belief that Alaska can truthfully claim to have within

her borders what Barnum would call "the greatest gold mine on earth," but its owners and managers do not ask or desire any such advertisement.

The width of the ledge between walls, on the tunnel level, as shown by the survey, is just 482 feet—the tunnel being 250 feet below the outcrop on which mining was originally commenced. From this outcrop, a shaft was sunk on the foot-wall, to connect with the tunnel, which was driven in through the hanging on a gently rising incline from the top of the mill. All the time this work was in progress, a little five-stamp mill was kept running, to practically test the quality and value of the rock; other tunnels, merely for exploration, were driven into the ledge, to the northwest and southeast, by which means it was proved conclusively that the pay rock held an approximate width of about 500 feet over the whole length of the company's two claims—3000 feet; in fact, that there was enough pay rock above the level of the main tunnel to keep a 120-stamp mill in constant operation for at least fifty years. It was ascertained, too, that the rock carried considerably more gold on the tunnel level than near the surface, while the mine product shows that the yield gradually increases as the main pit, the bottom of which is still 159 feet above the level of the tunnel, grows in depth. Starting with a yield of about $8.50 a ton, the management now confesses to a little over $14, exclusive of sulphurets, while I am informed that frequent assays give promise of nearly if not quite $100 a ton by the time the tunnel level is reached. Assays of the tailings show a loss of only about 25 cents a ton, as compared with the assay value of the rock.

The stamp-mill was started in July, since which time its run has been equal to a little less than half-time, owing to an unexpectedly insufficient supply of water-power. Hereafter, the mill will be supplied with auxiliary steam-power, and when that is done, the country may expect to hear of a bullion product from this mine and mill that will dwarf into insignificance that of any other mine the world has ever known. Figure it out for yourself: 360 tons a day at say $14 a ton, free gold, and half that value in sulphurets, the cost of mining and milling, every thing included, being not more than $1.25 a ton! Then take into calculation the fact that the rock is constantly growing richer, and that the mine can easily be made to produce enough of it to keep five times as many stamps incessantly pounding, and you will have something like an adequate idea of Alaska's first, but it is hoped not greatest, gold mine—the hope amounting almost to positive belief, being based on the known existence of a quartz ledge on Admiralty Island that carries a width three times greater than that of Douglas Island, and the outcroppings of which assay all the way from a trace to a dozen dollars in gold.

HALF A MILLION DOLLARS ALREADY SHIPPED.

But to the results thus far secured on the mine and mill under consideration. Working something over half-time, the output has been a little over half a million dollars in bullion, with not less than a quarter of a million remaining in the accumulated sulphurets, for the treatment of all of which, as fast as concentrated, more roasters, which are now being added, were found necessary soon after starting up. Given the steam or water-power necessary to the continuous operation of the 120 stamps and forty-eight concentrators (Frue vanners), and sufficient roasting capacity, the mine and mill would have been able by this time to show a product of nearly $2,000,000 as the result of the first seven months' work.

The tailings are concentrated on Frue vanners and the sulphurets are roasted in two revolving furnaces, ten or twelve feet long and eight or ten feet diameter. Two more furnaces are being erected, when the four will have a capacity of about 12 tons of concentrates in twenty-four hours.

The roasted concentrates are chlorinated by the Plattner process, and the gold precipitated by ferrous sulphate.

I am told that an 80-stamp mill has been ordered for the property adjoining the Alaska Company's claim on the northwest, and that it will be erected the coming summer. San Francisco capitalists are negotiating for other claims on this great gold belt, and it is altogether probable that a number of other mills will be projected and placed in course of erection within the next few months, while it is hardly supposable that the rich quartz lodes of the Silver Bow basin will long be permitted to hold fast their golden treasures for want of a few and comparatively inexpensive mills. Altogether, there is every reason for the belief that, within a year from this writing, Juneau will have become one of the most active and prosperous mining centers in the United States.

Explorations are gradually extending, in a careful, practical sort of way.

IMMENSE QUARTZ LEDGES,

more or less rich in the precious metals, are said to exist on the headwaters of the Yukon. These rumors appear well founded; for among those now here preparing for the trip are several men who made the journey last spring, returning late in the fall, and whose reticence argues possession of a knowledge which, if not golden, they nevertheless evince no inclination to impart to others. The trip is a long, laborious, and hazardous one—from here to the head of tide-water in Chilcoot Inlet, thence across the mountain divide thirty-five miles, on foot, to a chain of lakes, connected by rapid streams flowing through dangerous cañons, several hundred miles to the great river, whose waters are said to flow over golden sands. Those who returned last fall brought with them a sufficient amount of gold-dust to justify the faith that prompts their return; while the fact that others remained, braving the rigors of the long and severe winter of that far-off section, is still further evidence that the rumors of rich placers on the Yukon and its tributaries rest on a solid foundation.

At Berner's Bay, twenty-five miles north of Juneau, some seemingly valuable deposits have been discovered since last fall, and thither a large number of prospectors will paddle their canoes early in the spring. Specimens from that locality shown me are full of free gold, and I shall not be surprised if the work now in progress results in the development of a number of valuable mines.

THE SILVER BAY DISTRICT.

All the old miners I have seen and conversed with, who have seen these claims, freely express the opinion that they are of very great value, and pronounce the quartz by far the richest they have ever seen, in Alaska or elsewhere.

Governor Swineford plainly intimates that Professor Elliott's pessimistic statements about Alaska were contrary to known facts. He states in so many words that he believes the interests of the fur company induced the professor to make what he knew was an untruthful report.

Governor Swineford states that the Alaskan climate is much milder than that of Michigan, and that all kinds of fruit and vegetables grow in great perfection there.

THE QUEENSLAND QUICKSILVER MINES.

A company to work these mines is now offering its stock in London—capital, £400,000. The board of directors includes a duke, an earl, and a consul-general; so of course the stock will sell whether there is any mine or not. The prospectus says:

"Quicksilver mines have generally been owned by governments, rich corporations, or men of vast wealth, and the public knows little of such enterprises beyond the fact that quicksilver mines exist, and are believed to be profitable for the reason that interests or shares in such mines are seldom offered except to close the estate of some deceased owner."

In this particular mine, the developments are stated as follows:

"Shafts and tunnels have been made on a number of veins, and a considerable amount of ore exposed, while by a crude retort erected on the spot, a few tons of quicksilver have been extracted and sold to the miners in Queensland at 3s. 3d. a pound, this quicksilver being highly appreciated because of its exceeding purity."

The duke's "average sample" assayed 6·65 per cent; but no statement is made of the yield of the ore producing "a few tons of quicksilver." The price to be paid for the property in which the duke is part owner is £355,000, of which £15,000 are to be paid in cash and the balance in stock. This price, in the absence of any demonstrated real value in the property, must be due to the fact that a live duke is the vender, and the duke and the earl directors.

The prospectus states that "a report has been made by Samuel L. Hester, Esq., a miner of experience in the quicksilver mines of California."

It is not stated whether the following estimates of the cost of working and of profits to be realized were made by the duke, the earl, or the "miner of experience," and there is absolutely no internal evidence that would enable us to decide.

"The cost of extracting and treating the ore after the mines are thoroughly developed, and the requisite machinery is in working order, should not exceed 13s. per ton of ore raised and treated.

"Taking the lowest price of quicksilver known in London at 1s. 6d. a pound, this should show a profit of £1 a ton on each ton of ore carrying one per cent of quicksilver.

"It is not proposed to work ore which contains less than one per cent of mercury. By assorting, it is believed that the average yield per ton may be raised to 12 or 15 per cent, equal to a profit of from £19 to £24 a ton. This plan, if adopted, would, of course, leave accumulations of low-grade ore on the dumps, but such ore would constitute a reserve of great value. As the demand for quicksilver is annually increasing, and the mines of the world are nearly all taken up, the day is not far distant when quicksilver should command much higher prices.

"It must not be lost sight of that this calculation is made on the basis of 1s. 6d., the London price, while the price in Queensland and Australia is much higher.

"It is estimated that the treatment of thirty tons of ore per diem should enable the company to produce profits at the rate of at least 25 per cent upon the capital of the company, leaving a good reserve fund."

The History of the Ammonia-Soda Process.—Mr. Ludwig Mond, in *Die Chemische Industrie*, refutes the claim advanced by MM. Fremy, Bouley, and Scheurer-Kestner, on behalf of MM. Schloesing and Rolland, and shows from patent specifications that this process was invented by Harrison, Grey, Dyar, and John Hemming, and patented June 30th, 1838, while Schloesing's patent was only taken out in 1854, and that of Schloesing and Rolland in 1858.

Aerial Navigation.—This is making substantial though perhaps not remarkably rapid progress. Dr. William Pole, in a letter to *Engineering*, reviews some of the results attained by Captain Renard in France, which are published in *La Nature* of January 9th. It is said that the practical solution of the problem of aërial navigation is placed beyond any doubt. Captain Renard's balloon was 8·4 meters in diameter and 50 meters long, having an ascending power of 2 tons. It made seven voyages in 1884 and 1885. The speed attained was about 13 miles an hour. In five out of the seven ascents, the balloon returned to the starting-point; and in descending, it was necessary several times to go backward and forward, as in laying a steamboat alongside a pier. The balloon answers its helm perfectly, and the experiments were quite successful. Captain Renard has determined from his experiments these two important elements: the resistance of the balloon to movement, and the efficiency of the screw. Thus:

$$R = 0{\cdot}01685 D^2 v^2.$$

Where R is the resistance of a balloon having a diameter D in meters and a velocity v in meters per second. If θ = the work of direct traction (motive work in kilogrammètres), we have

$$\theta = 0{\cdot}01685\ D^2 v^3.$$

If T is the work of the screw-shaft (= effective horse-power × 75), and T_1 the work at the limits of the motor, then

$$T = 0{\cdot}0326\ D^2 v^3 \text{ and } T_1 = 0{\cdot}0397\ D^2 v^3,$$

or the general formula adapted to English measures is:

$$\text{Horse-power applied to screw-shaft} = \frac{d^2 v^3}{873{,}500}.$$

The efficiency was found to be about 52 per cent. Dr. Pole says that "a balloon of 50 feet diameter would easily carry power enough to propel it through the air at 20 miles an hour, leaving some three tons available for cargo."

NOTES ON THE STEAM-STAMP.*

By Frederick G. Coggin, Calumet & Hecla Mills, Lake Linden, Mich.

(*Continued from page* 210.)

This enormous waste was brought to the attention of Mr. E. D. Leavitt, Jr., who had then become the consulting engineer of the Calumet & Hecla Mining Company, who thought of the subject often and long before the radical idea afterward embodied in the Leavitt stamp dawned upon him, as it did somewhat curiously. In coming up from the mine one day upon the man-engine, his mind was busy "mulling" over the subject of steam-stamps, when, as he stepped upon the platform at the top, he exclaimed, "I've got it!" and thereupon he sketched the differential steam-cylinder that formed the basis of future stamps, which were to supersede the Ball stamp in the Calumet & Hecla mills. This cylinder is shown in Fig. 102, its operation being as follows: The steam is admitted above the upper piston-head through an ordinary gridiron valve *A*, being exhausted through a, like valve *B*, into the condenser, the office of the steam thus used being solely to make the down-stroke. The space *C*, around the lower cylinder and below its piston, is a receiver, into which steam is admitted through the opening *D*, a uniform pressure as desired being maintained by a Watts regulator. This pressure is solely for the purpose of raising the stamp-shaft, such pressure being maintained as will do it in the proper time, and against which the blow has to be made. The space between the two piston-heads is connected with the condenser, in which a constant vacuum is maintained. In the first cylinder, the diameter of the upper cylinder is 20 inches, that of the lower 11$\frac{1}{16}$ inches, the relative areas being 2·93 to 1. This cylinder is still running. The valve gear designed for the first Leavitt stamp was of the cam and roll type peculiar to all the Leavitt compound engines up to this time, and contemplated an independent cut-off valve upon the back of the main steam-valve. This was soon found to be unnecessary, and it was discarded. There was but one roll for each valve, and it worked between two cams, an internal cam for one motion and an external cam for the other. The cam for opening the steam and that for closing the exhaust were fixed, while those for closing the steam and opening the exhaust were capable of adjustment while the stamp was running, as shown in Figs. 105 and 106, in which it will be seen that the cam *X* is thrown forward or backward by a feathered sleeve. The cams were set by degrees of a circle marked on a dial upon the cam-shaft, so that if, for instance, the opening of the steam-valve be taken at 0 degree, the closing point was set at 70 degrees, the opening of exhaust at 110 degrees, and the closing of the same at 355 degrees. This style of cam and roll, which has worked so well upon the slow-working compounds, proved a failure on the stamp, where the constant reversal of the motion of the roll from 90 to 95 times a minute, with the heavy valve and heavy moving parts necessary for such a machine, very soon cut both rolls and cams so as to make them useless, and the mechanism for changing the position of the cams as above described being found unnecessary, the whole valve gear as shown in Figs. 105 and 106 was superseded by that shown in Fig. 107, consisting of four outside cams with an independent roll for each motion of the valves. The opening steam and closing exhaust-cams were fixed as before, the closing steam and opening exhaust-cams being bolted to the face of the others, yet so as to admit of adjustment as shown in the cut. This valve gear leaves nothing to be desired, as it is simple, efficient, and durable. The upper part of the cylinder is steam-jacketed, the whole cylinder being covered with felt and a wood lagging. The stamp with the cylinder above described is still running, with an average stamping capacity of 225 tons of rock per twenty-four hours. Some peculiarities of its working, however, seemed to indicate that the relative areas of the cylinders were not just right, and that the receiver was too small, and for the second stamp the cylinder shown in Fig. 103 was designed, the upper cylinder being 21$\frac{1}{4}$ inches in diameter, the lower cylinder 14 inches, the relative areas being as 2·36 to 1, while the receiver was considerably enlarged.

The mortar was also changed, being made four-sided, giving double the screen surface. This increased its weight two tons, while the weight of the anvil was increased to twelve tons—a total increase of four tons in the parts resisting the blow over and above the weight of the same

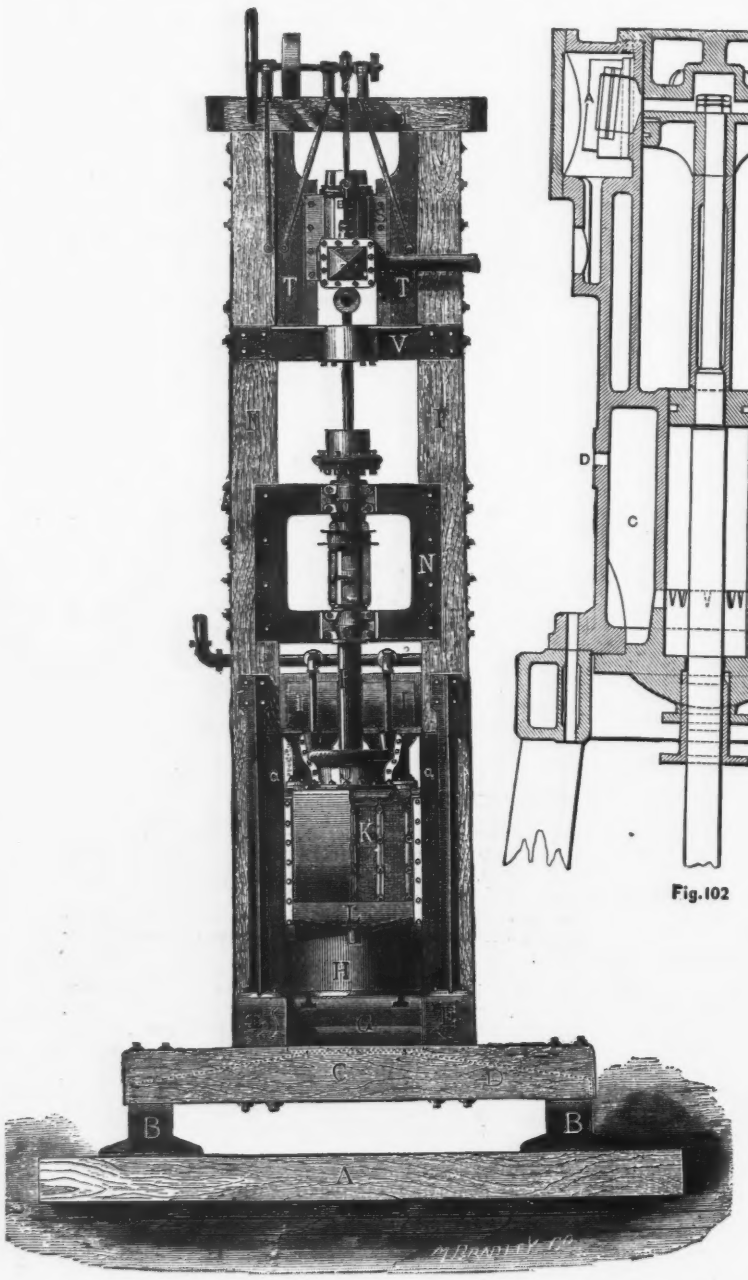


Fig. 99.

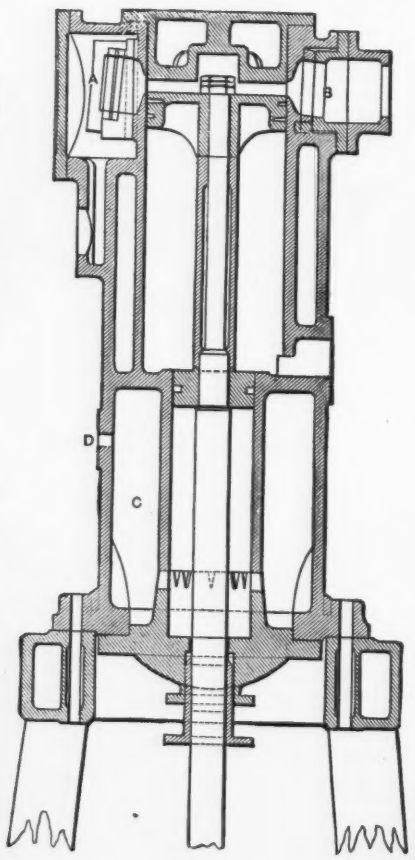


Fig. 102

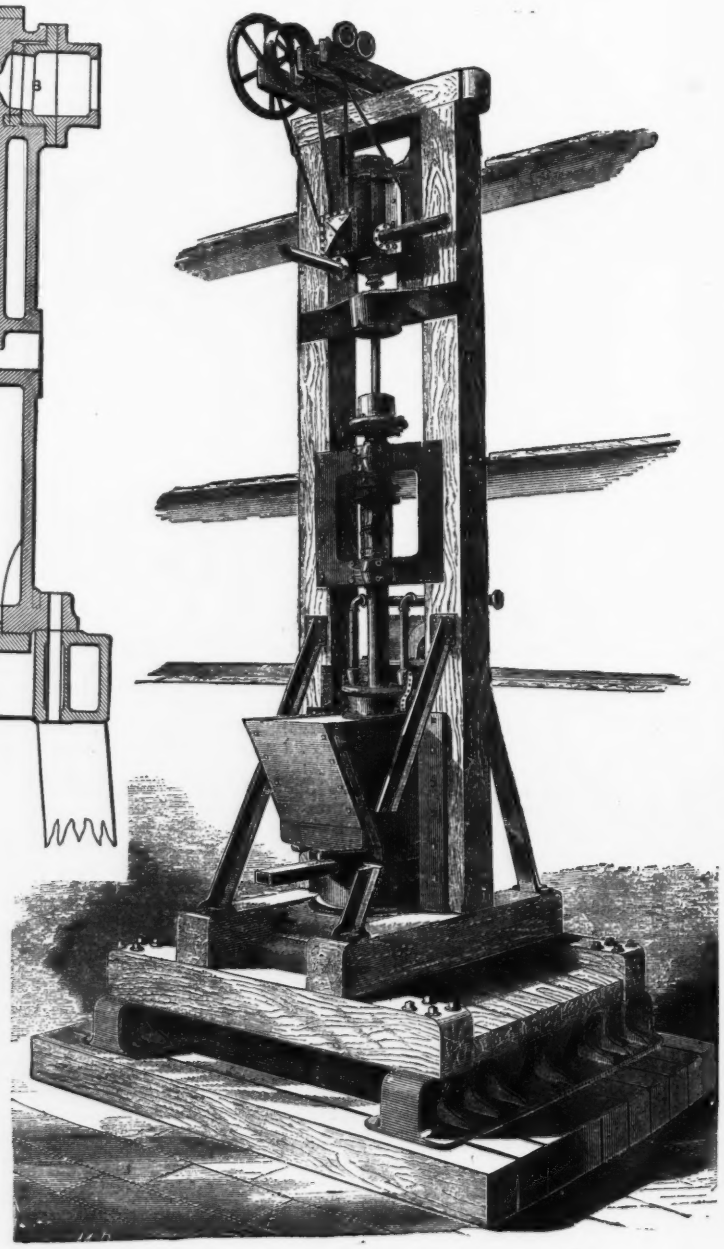


Fig. 98.

* From the Transactions of the Society of Mechanical Engineers.

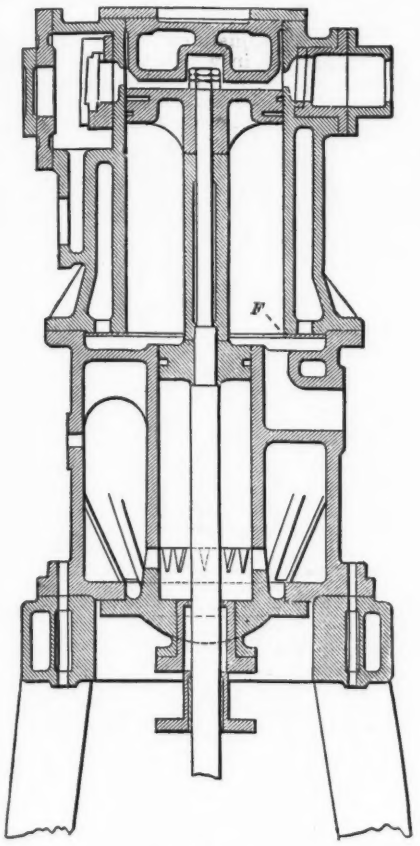


Fig. 104

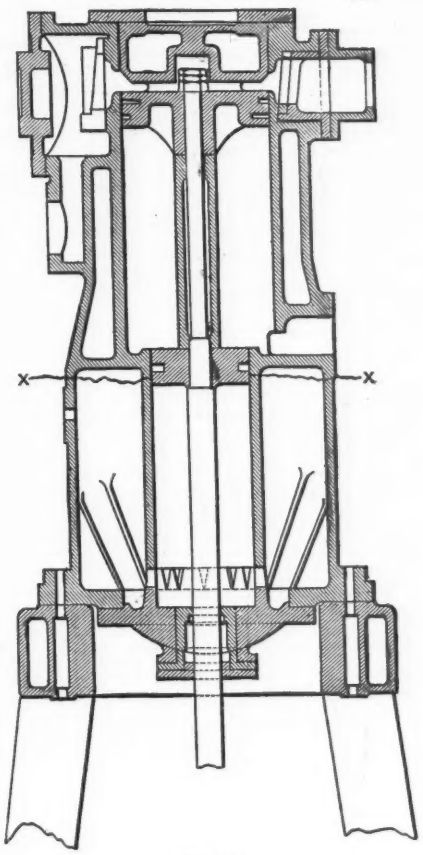


Fig. 103

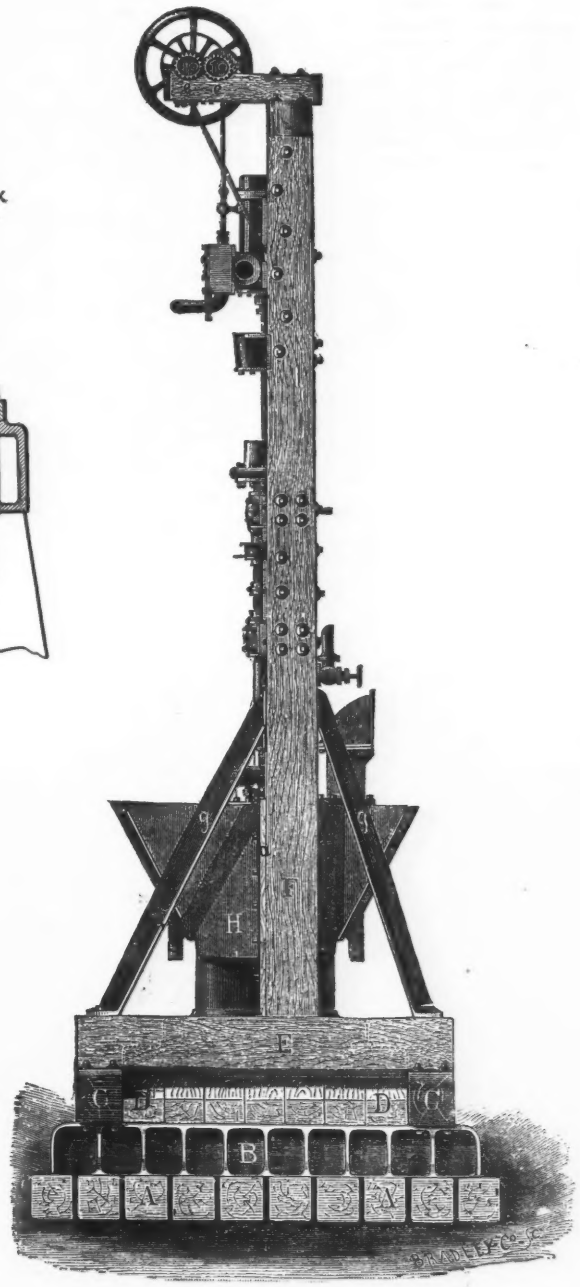


Fig. 100.

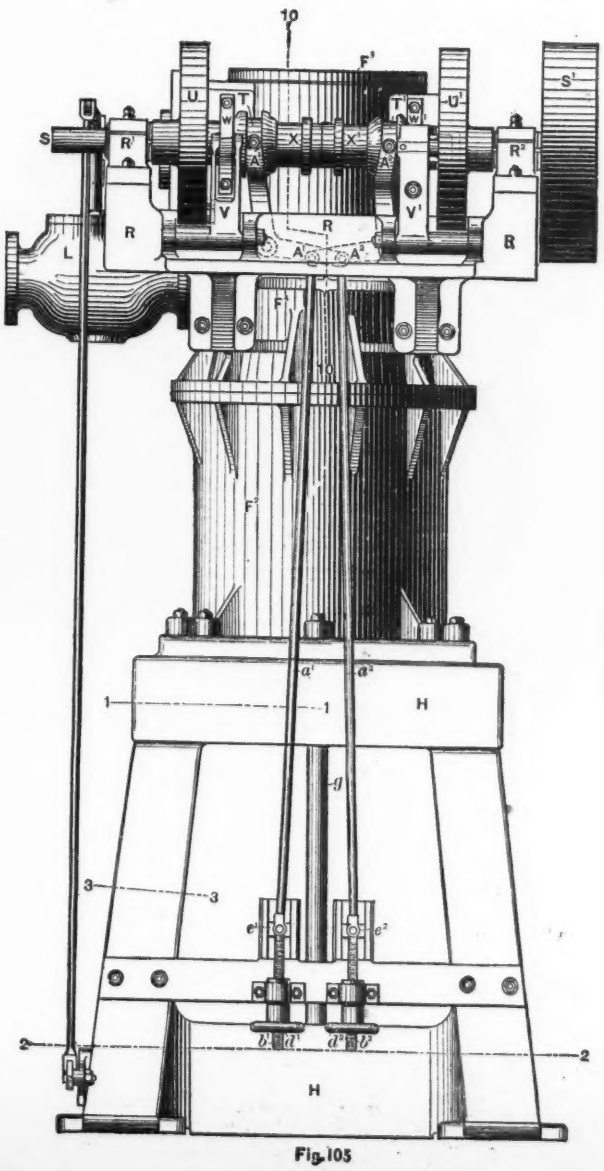


Fig. 105

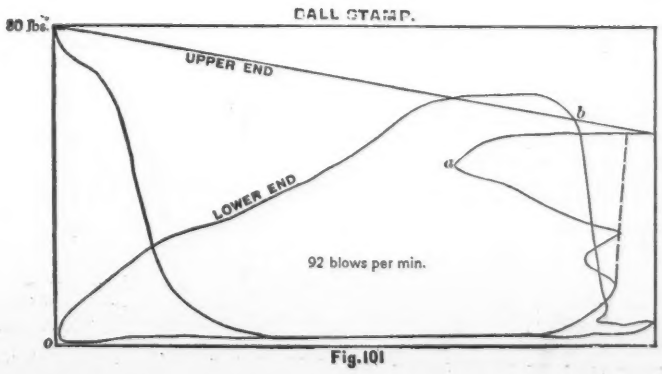


Fig. 101

parts in the first stamp. One other change of great importance was made.

With the rubber bumper before described, it was still necessary to leave a large clearance at the top, and in the first Leavitt stamp 2½ inches clearance was given as in the old stamp, and the diameter of the cylinder being larger, the clearance at this place was greater even than in the old cylinder. The total clearance measured 1628 cubic inches, or about 22 per cent of a full stroke, so that while the stamp reached a greater capacity, little could be claimed for it on the score of economy, and it became evident that some change was necessary to secure the greatest economy. One suggestion after another resulted in substituting for the rubber bumper a dash-pot 25 inches in diameter and 4 inches deep, the stamp shaft bonnet being formed to serve as the dash-pot plunger. (*See* Figs. 108 and 109.)

With these changes, the second stamp was constructed and started, a clearance at the top of ¼ inch being allowed when the bonnet bottomed in the dash-pot. The first dash-pot was made without the rubber rings *R* shown in the cut, and worked perfectly until shortly both pot and plunger became so worn as not to prevent the escape of the air caught in the pot, and not enough could be retained as a cushion to prevent the bonnet striking the bottom of the pot, which would result in great damage to the stamp. To prevent this, the pot was grooved in the bottom, and the flexible rubber rings *R* were inserted, projecting beyond the surface about ¼ inch. The air caught within the rings forms an absolutely perfect cushion, and this improvement insured the efficiency of the dash-pot, which over three years of constant use have not impaired, but which otherwise would have been useless.

Not long after the stamp was started, a very curious accident happened, the cylinder breaking in two on the ragged line *x*, *x*, Fig. 103. The upper cylinder was lifted about a foot, and tipping forward, would have gone down through the three floors below but for the piston-rod, which held it in an ominous suspense until it was secured. The occasion of the break may be explained as follows: It will be noticed in the cut that the bottom cylinder-head is extended upward to meet the lower cylinder, of which it is practically an extension, the steam pressure working through the *V*-shaped spaces shown where the head and cylinder join. The object of this is to form a dash-pot into which the lower piston can cushion, when from any cause the stamp-shaft should drop so low as to do damage to the parts. It is probable that the cylinder and head came nearly or quite together when cold, and that the extra expansion of the inner cylinder when heated was the occasion of the break. Fig. 104 shows the construction of the cylinder made to take the place of the broken one. It is made in two pieces, the lower end of the steam-jacket space being closed by an annular expansion plate *F*, which is bolted to the ends of both outer and inner cylinder, and which amply compensates for any unequal expansion, while the lower cylinder is left far enough from the head to allow for its expansion. This cylinder is perfect, and with the dash-pot the clearance is reduced to about 500 cubic inches, or 5 7 per cent of the contents of a full stroke of 24 inches. The average stamping capacity of the second stamp thus perfected was, for 1884, 230 tons per twenty-four hours, but this has since been increased to 240 tons per twenty-four hours. The saving of fuel of the first Leavitt stamp, compared with the Ball stamp, is about 10 per cent, with a gain in capacity of about 25 per cent. The saving of fuel of the second stamp is from 35 to 40 per cent, with an increase in capacity of over 50 per cent.

With this showing, it did not take long for the Calumet & Hecla Mining Company to decide to replace all the Ball stamps with the Leavitt stamps, and to add a few more of the latter, until its stamping plant consists of twelve Leavitt stamps, all of which will be in commission within twelve months. Figs. 110 and 111 well illustrate the stamps as now constructed, the latter showing also the air-pump with which each stamp is provided. The steam-indicator is attached at *x*, Fig. 110, the motion for which is obtained by the system of levers plainly shown. Fig. 112 is a fair sample of the indicator-cards from the Leavitt stamps, the line *a*, *b*, showing the receiver pressure, which increases about 12 pounds as the piston descends. Comparing this card with Fig. 101, the contrast will be more clearly seen. In the old stamp, the steam follows full stroke, the decreased pressure being due to wire drawing. In the new, the point of cut-off is well defined, and the expansion line a very good one.

The excessive lead is necessary to catch the up-stroke of the piston, but it is less in the Leavitt stamp than in the Ball. The extreme depression at *a* in both cards was caused by the reaction of the barrel of the indicator, the other irregular lines being due to the vibration of the spring timbers. The indicator rig shown in Fig. 110 is very stiff, and has no lost motion, the barrel string being of cat-gut and as short as possible, but the sudden stop of the reciprocating parts of a stamp under a velocity of 18 or 20 feet per second, with the constant shaking of the stamp, is not conducive to fine lines in an indicator-card. The back pressure in Fig. 101 was due to exhausting through heating pipes.

(TO BE CONTINUED.)

Natural Gas in Cremation.—This was used for the first time for cremating purposes at Sampson's natural gas crematory in Pittsburg, Pa., on the 17th inst. The body was placed in the retort at half-past seven o'clock A.M., and in less than an hour was reduced to ashes.

Proposed Bank of England Notes against Silver Bullion.—In a letter to the London *Times*, Earl Grey proposes that one-pound notes should be issued by the Bank of England against silver bullion, for which they should be exchangeable, not at a fixed price, but at the current rate of the day, to be settled by a weekly quotation in the official *Gazette*. A certain amount, not defined, of these notes, Earl Grey would have issued without security, and then no more should be sent out except in exchange for silver at the market price, all such notes being then redeemable in silver at the current rate. This proposal is founded upon a scheme suggested by Ricardo. There can be no doubt, says the Manchester *Guardian*, that one-pound notes would very speedily become popular in England, as they already are in Scotland, and their use would, of course, tend greatly to counteract the scarcity of gold, as well as to save the very considerable loss from wear and tear to which the gold currency is constantly subject. It may be added that Professor Jevons was entirely in favor of the issue of one-pound notes in England.

FOREIGN COMPETITION IN PETROLEUM.

In all probability, the oil-fields of Burmah, which country was recently annexed to the English Indian possessions, will be exploited so soon as that country becomes settled, which, with the force that the English can put into the field, ought to be within a very few months. These fields, says the *Stockholder*, have been only very crudely and partially explored, but have been of importance for hundreds of years, and the only thing that has delayed their development has been the wretched system of government of the native kings. This district is located in the geographical center of the case trade, and on all oil produced there a saving of from 3 to 4 cents a gallon would be made in the cost of transportation, as against shipments from America. The route to and from the fields is all water, and labor, cheap, reasonably intelligent, and fairly trustworthy, can easily be obtained. It is not at all likely that English enterprise will permit this valuable deposit to remain in the hands of natives, when very large profits can be obtained at a comparatively small outlay, and it is reasonably certain that, within a year or two at the utmost, the American exporter can count on another foreign competitor. What the outcome of the Suakim District will be is another matter; but if there be any considerable deposit of oil there, the English may be depended upon to utilize it. The nearest refinery to Suakim is at Fiume, at the head of the Adriatic, in Austria, and distant from Suakim from 2300 to 2500 miles. It is about 800 miles from Suakim to Port Said at the Mediterranean. Accounts from Europe all agree that the Russians are pushing their preparations to land their oil in Europe most energetically, and the cable has announced that an Austria-Hungarian company has obtained a monopoly of shipping the oil westward by the Black Sea route. Tank steamers are building to supply the Baltic and English markets, while those interested in the Russian article are now doing their best to get it to market. It must be admitted that their operations have been very slow, and the English may be expected to do more in the way of developing and marketing the products of Egypt and Burmah in three years than the Russians have succeeded in doing in the last twenty. At present prices of refined oil, the importers of Western Europe do not fear any close competition with the American article; but it is hardly longer a question with refiners and exporters here how much prices can be advanced this year, but the more important one is, how much longer America's foreign trade can be held.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book-buyers, give the retail price.]

GEOLOGICAL SURVEY OF KENTUCKY. JOHN R. PROCTER, DIRECTOR. *Chemical Analyses.* A. First, Second, and Third Chemical Reports, and Chemical Analyses of the Hemp and Buckwheat Plants. By Robert Peter, M.D., etc., etc., Chemist to the Survey, and John H. Talbott and A. M. Peter, Assistants. Stereotyped for the Survey by Major, Johnston & Barrett. Yeoman Press, Frankfort, Kentucky. 1884. 8vo, pages iv + 477 (including Index).

[*The same.*] A. Vol. II. Fourth, Fifth, and Sixth Chemical Reports, and Comparative Views of the Composition of Soils, Coals, Ores, Limestones, Clays, Marls, Mineral Waters, etc., etc. By Robert Peter, M.D., and A. M. Peter, Assistant. 8vo, pages 328, and Index, 20 pages.

KENTUCKY GEOLOGICAL SURVEY AND BUREAU OF IMMIGRATION. JOHN R. PROCTER, DIRECTOR. *Report on the Progress of the Survey*, from January, 1884, to January, 1886. By John R. Procter. Frankfort, Ky.: Capital Office, John D. Woods, Public Printer and Binder. 1886. 8vo, pages 20.

Fifth Annual Report of the United States Geological Survey to the Secretary of the Interior. 1883-84. By J. W. Powell, Director. Washington: Government Printing-Office. 1885. Quarto, pages xxxvi + 469 (including Index), 58 Plates, and 143 Figures.

Key to the Text-Book on the Mechanics of Materials and of Beams, Columns, and Shafts. By Mansfield Merriman, Professor of Civil Enginering in Lehigh University. New York: John Wiley & Sons. 1886. 8vo, pages 16. 50 cents.

Bulletin of the United States Fish Commission. Vol. V., for 1885. Washington: Government Printing-Office. 1885. 8vo, pages xi + 494 (including Index), 9 Figures, and 2 Plates.

[Published by Authority of the Surveyor-General of Newfoundland.] *Hand-Book of Newfoundland:* containing an Account of its Agricultural and Mineral Lands, its Forests, and other Natural Resources. With a Map of the Island. Boston. 1886. 8vo, pages 119. Paper covers.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

GRANTED MARCH 16TH.

337,867. Pipe-Joint. William H. Richards, McKeesport, Pa.
337,868. Furnace for the Combustion of Natural Gas. William Rippey, Allegheny City, Pa.
337,887. Hand Rock-Drill. Hadwen Swain, Denver, Colo.
337,898. Carriage for Rock-Drills. Charles J. Van De Poele, Chicago, Ill.
337,900. Process of Separating Sulphate of Lime from Saline Solutions. Thomas G. Walker, Morristown, New Jersey.
337,901. Pulverizing-Mill. E. A. Wall, Bullion, Idaho.
337,959. Surveyor's Target. William Keuffel, Hoboken, New Jersey.
337,967. Process of Extracting Gold and Silver from Ores and Mattes. Pierre Manhès, Lyons, France.
337,968. Rock-Drill. Frank Manning, Ardmore, Pa.
337,979. Method of Tempering Metal. Samuel E. Mower, New Haven, Assignor to Henry G. Thompson, Milford, and Harry G. Thompson, New Haven, Conn., and Arthur G. Thompson, New York City.
337,996. Process of Obtaining Aluminium from Aluminous Ores and Earths. Frederick J. Seymour, Wolcottville, Conn., Assignor of one half to William Henry Brown, New York City.
338,028. Utilization of Natural Gas. Henry Bower, Philadelphia, Pa.
338,061. Process of Making Fluorine Salts. Richard Grätzel, Hanover, Prussia, Germany.
338,093. Coupling for Joints of Gas-Conduits. George Marland, Pittsburg, Pa., Assignor of one half to Hugh Hagan, same place.
338,105. Feeding Fine Fuel. William Rogers, New Orleans, La., Assignor to himself, Augustus Wheaton Burke, Henry Warner, Henry Gehl, and Phillip Hoelzel, same place.
338,206. Kiln for and Method of Burning Clay. Jesse Stubbs, Mount Pleasant, Assignor of two thirds to Nelson A. Gray and Carl L. Mahrenholz, both of Red Oak, Iowa.

FURNACE, MILL, AND FACTORY.

The Rosena Furnace, at New Castle, Pa., has been leased, and will be put in blast.

The puddling department of the Terre Haute Iron and Nail Company, at Terre Haute, Ind., which has been idle for some time, has resumed operations. The nail department is still idle.

The Omaha Nail-Works, Omaha, Neb., were purchased on the 19th inst. by a new company for $60,000. The capital stock of the new company is $150,000, with $120,000 paid in. The works will be enlarged and improved at once.

The Desloge Lead-Works at Bonne Terre, Mo., have been destroyed by fire. The loss is said to be $100,000.

Work of erection will begin the coming summer by the Sheffield iron furnace, Sheffield, Ala. According to the Baltimore *Sun*, Mr. J. P. Witherow, of Pittsburg, who is said to be interested in this enterprise, in giving his figures for iron at Sheffield, put its cost at $9.11 a ton.

The Pottstown Iron Company has been granted a renewal of the charter of 1866 ; capital, $10,000.

No. 1 furnace of the Dayton Iron Company, Dayton, Tenn., of which Mr. C. Jamme is General Manager, which was successfully blown in on the 9th of February, has since averaged a daily output of 96 tons, running up some days to 108 tons. When up to the full capacity, it will yield about 125 tons daily. They are running on Tennessee ores and coke manufactured at the company's plant of coke-ovens near the furnace. It is expected to blow in No. 2 very soon. The coal is furnished by mines owned by the company. Recently, another seam of coal was found near the furnace, and this coal is said to make an excellent quality of coke. One hundred more coke-ovens will be built at this new mine at once.

The works of the McCullough Iron Company, at Northeast, Md., were shut down on the 22d inst., on account of inability to secure a supply of coal, owing to the strikes at the mines. The rolling-mills of the company at West Amwell, near Elkton, Md., which are supplied by the works at Northeast, will probably shut down in consequence.

A number of Pittsburg capitalists have formed a company for the erection of steel-works at Germantown, where the company has purchased fifty acres of land, on the Pittsburg, Virginia & Charleston Railroad. The plant will have two five-ton Bessemer converters of the most modern pattern.

The Bullock Manufacturing Company, of Chicago, Ill., is busy with a strong force working time and half-time, and orders are coming in quite freely.

Mr. J. R. De Lemar, representing Messrs. Wahl Brothers, of Chicago, Ill., has ordered three Waring centrifugal pulverators (wet process), one of which has been shipped to Denver.

The recent sale of the Kloman Iron and Steel-Works, at Moundsville, has been set aside, and the mill is again advertised to be sold at public sale.

Oliver Brothers & Phillips, of Pittsburg, Pa., have been awarded the contract for supplying the iron for between three and four miles of elevated railroad to be built in Baltimore by the Baltimore & Ohio Railroad Company this summer. The contract for the erection of the works has been awarded to C. J. Schultz, of the Iron City Bridge-Works, of Wood's Run.

The Ohio Steel Barb Fence Company began suit in the States Circuit Court at Chicago, Ill., on the 23d inst., against the Washburn & Moen Manufacturing Company to recover $111,192.17, which it paid in royalties to the Washburn & Moen Company as its barb wire license from 1881 to 1883 inclusive. The Ohio Company claims that the Washburn & Moen Company violated its license contract by giving a license to manufacture barb wire to Jacob Haish, of De Kalb, without charging him any royalty. It therefore seeks to recover back every cent of royalty that it paid in the years above mentioned.

The Adams patent for casting copper cylinders: The cases of Adams against the Bridgewater Iron Company and the American Tube-Works against the Bridgewater Iron Company have been decided by Judge Colt, of the United States District Court of Massachusetts. The question involved was the validity of the Adams patent for the improvement in casting copper cylinders, the judge deciding that the complainants have made out a case of infringement and entering a decree in their favor. In another case, decided on the same date, Judge Colt held that the Bridgewater Iron Company has infringed the first claim of the Guthrie patent, also covering an improvement in casting copper tubes.

The Dickson Manufacturing Company, Scranton, Pa., is building 6 mogul freight engines for the New York, Ontario & Western Railroad.

The Catoctin furnace (anthracite), Catoctin, Md., which was banked last month, because it was unable to obtain a supply of coke, has blown in again.

Samuel R. Seyfert's rolling-mill, at Naomi, Pa., shut down on the 25th inst., because of the scarcity of soft coal, in consequence of the strike in the bituminous coal regions.

PROPOSALS.

The Office of Building for State, War, and Navy Departments at Washington, D. C., will receive proposals until April 15th, for furnishing and delivering under one contract the tinned sheet-copper rivets, galvanized iron fastenings, etc., required for the roof of the west and center wings of the Building for State, War, and Navy Departments, in Washington.

LABOR AND WAGES.

The Minnesota Iron Company, of Tower, Minn., has decided to raise the wages of all its employés April 1st. Miners are to get an advance of 8 per cent over present wages, and common laborers an advance of 7 per cent.

The five days' strike of the employés of the National Tube-Works, at McKeesport, Pa., is ended, the men returning to work at Manager Flagler's terms, $1.25 a day to laborers and the restoration of the wages of 1884 to all other employés, which will be an increase of 7, 10, and 15 per cent.

The Lookout rolling-mill, at Chattanooga, Tenn., announces an advance of ten per cent in all departments.

A general strike of the miners of the Fourth District, Pa., was inaugurated on the 22d inst., the operators having refused to grant the 11-cent advance demanded. All the mines in the region are now idle. Some of the operators offered an increase of 5 cents a ton, which was not accepted.

The miners on the Alleghany Mountains at Gallitzin, Mineral Point, Lilly's, Ben's Creek, Portage, South Fork, Summer Hill, Pa., and at the east end of the tunnel, who were given an increase of five cents a ton on March 1st, and who struck for an additional five cents, were granted the latter advance, and resumed work on the 25th inst. The men at Coulter & Huff's mines, near Greensburg, have joined the strike.

Advices from the Reynoldsville bituminous coal district, Pa., are, that the Walston and Beech Tree mines are working, the Buffalo, Rochester & Pittsburg Railroad Company having given the miners the forty-five cents a ton demanded.

The operators throughout the George's Creek coal region, Md., have posted notices directing the miners in their employ to remove their tools from the mines, and fixing times when they shall come to receive the wages due them for work done during the eight days of this month. The miners have complied with the request, and will receive their pay between now and the 30th.

The North Coalburg Company, Charleston, West Va., has met the miners' demands and is paying 2½ cents asked. With a few exceptions, all the mines above here are running at the rates demanded. The idle miners at Marmet, Campbell's Creek, and McFarlan's received a large lot of provisions from Pittsburg, but no money. The Knights of Labor have organized at every mine in the valley.

The railroad strike is doing great injury to business at La Salle, Ill. The Matthiesen & Hegeler and the Peru Zinc-Works, which receive their ore from Missouri, will have to suspend operations if the strike does not end in a short time, as they have but a small quantity of mineral on hand.

A demand for an advance in wages from $2.50 a day to $2.75 has been made by the machinery molders of Pittsburg and Alleghany, Pa., to take effect April 1st. There are thirty-four foundries in the two cities. It is thought that the increase will be conceded.

The strike in the Clinton Iron-Works of Graff, Bennett & Co., at Pittsburg, Pa., begun two months ago for a ten per cent advance, has resulted in a victory for the men. The works resumed operations on the 22d inst.

TRANSPORTATION NOTES.

The Canadian Pacific Railroad is operating its line from Winnipeg as far as Conmore at the foot of the mountains ; but arrangements have been made to continue the operations to Donald, 1022 miles west of Winnipeg, between the first range of the Rockies and the Selkirks. About May 1st, trains will be run through to Port Moody, or rather Coal Harbor, which it is proposed to call Vancouver. This point will be the Pacific Coast terminus of the line.

Grading on the Midland Railroad between Leadville and Aspen, Colorado, has begun. This road is of great importance to both of these mining districts. The road will pass through the coal-fields in Garfield County, Colo. This would bring the distance from the coal to Leadville about 100 miles, and to Aspen about 50 miles.

A charter has been granted to the New York, Bloomsburg & Western Railroad Company, with a capital of $10,000,000. The route will embrace the counties of Carbon, Schuylkill, Columbia, Northumberland, Union, Lycoming, Clinton, Center, Clearfield, Jefferson, Armstrong, Butler, and Lawrence, Pennsylvania. The eastern terminus is to be Mauch Chunk, and the western New Castle, Pa., where it is probably intended to connect with the Pittsburg & Lake Erie Railroad.

The Delaware & Hudson Canal will be opened on April 5th.

COAL TRADE NOTES.

ILLINOIS.

The United Coal Mining Company has been incorporated with a capital of $60,000, to operate, on the co-operative plan, the Johnson, Pittsburg, and Rose Hill mines, located on the Pittsburg Railroad, near Belleville.

The coal company working at Kinmundy, having gone to the depth of nearly 1000 feet, struck a 32-inch vein, and a few feet lower a 2-foot vein. The shaft at Salem is now over 600 feet, and at this place 565 feet. There are now two coal mines in Marion County in operation, three other shafts are sinking, and another company at Patoka has just been organized.

MARYLAND.

Several boats, the first of the season, cleared by canal for Georgetown at Cumberland on the 22d inst. They were loaded with coal mined before the strike.

PENNSYLVANIA.

BITUMINOUS.

The fire in the Venture mine, at Banksville, has extended, and attempts were made to flood the mine.

A fire broke out in the engine-house at the Hecla Coal-Works, Mount Pleasant, on the 24th inst., and spread so rapidly that the workmen were driven from their places before the boilers could be rendered harmless. One of the boilers exploded, doing considerable damage, but injuring no person. The loss to property by the fire and explosion will reach $25,000.

COKE.

All the members of the Connellsville Coke Producers' Association, with but one or two exceptions, have signed the pooling agreement for the ensuing year, from April 1st. They presented a scale of commissions slightly less than that which has ruled for the past two years, and which amounted to 11 cents a ton when coke was $1.35, up to 15 cents at $1.50. This was thought too high, and a uniform rate of five per cent was agreed upon.

The Washington and Tyrone mines of Laughlin & Co. at Broad Ford have been consolidated, and will hereafter be known simply as the Tyrone mines.

The Rising Sun works of McClure & Co. have been merged with Bessemer, and will take the name of the latter.

TENNESSEE.

The Soddy Coal Company, of Soddy, has greatly improved the quality of the coke by introducing a washer and washing all the stock before placing it in the ovens. This has also given them a better trade for the coke.

Reports dated the 25th inst. state that a fire is raging in the coal mines of the Roane Iron Company at Rockwood. A later dispatch says that the fire companies have it well in hand.

WEST VIRGINIA.

The Howard Consolidated Coal and Coke Company has bought the mines of the Monongahela Gas Coal

Company at Wilsonburg, Harrison County, which have been idle several months, and has agreed to put them in operation and build 100 coke-ovens to use the coal.

WYOMING.

The Legislature has passed the bill mentioned in our issue of February 27th, and has provided for a territorial inspector of coal mines, at a salary of $5000; provided him instruments at a cost of $500, and voted $1500 for his contingent expenses. The Governor appointed Newel Beeman, of Evanston, to the office.

GAS AND OIL NOTES.

Exports of refined, crude, and naphtha from the following ports, from January 1st to March 20th:

	1886. Gallons.	1885. Gallons.
From Boston	630,310	1,399,390
Philadelphia	23,160,939	15,379,032
Baltimore	2,601,622	2,263,024
Perth Amboy	718,086	.....
New York	80,215,264	75,234,455
Total exports	107,326,221	94,275,901

INDIANA.

The subscribers to the stock of the Natural Gas Well Company have perfected organization. The capital stock is $4000. Property has been purchased on Fifth street, Lafayette, where boring will begin.

Work in the block coal mines of Brazil District is reported very slack, and there is much complaint from the miners. Many mines are working but half-time, and some but one day in a week. A large demand comes from Wisconsin, Dakota, and other points in the Northwest for domestic consumption. During winter, the average shipment aggregates 5000 cars monthly. Scarcity of work now is unfortunate, as the miners and operators have just fixed upon a scale of prices to govern for a year, beginning May 1st. It is doubtful, however, whether the present slackness of work will be suffered to interfere with the amicable adjustment of wages as provided for in the scale.

KENTUCKY.

The Louisville Natural Gas and Heating Company has been incorporated at Louisville, to develop and utilize petroleum and natural gas. The capital stock is to be $1,500,000.

PENNSYLVANIA.

Work will soon begin by the Philadelphia Natural Gas Company on its lines. It has a good many connections and small pipes to lay, but all the big lines are about completed. It is estimated that $150,000 will cover all the work to be done. The company's receipts have been largely increased of late by advantageous contracts, while the expenses have been lessened.

The case of the Standard Gas Company against the city of Meadville has been decided in favor of the city. The decision gives the Meadville Natural Gas Company the exclusive privilege of using the city streets for two years. The case was tried before Judge Williams, of Tioga County, who ruled that, although the act of 1885 forbids the granting of a monopoly, the city had entered into a contract and could not now break it. The position is said to be a radical one, and is opposite to that in the People's Gas Company suit.

The Alleghany Common Council has passed ordinances granting the People's Natural Gas and Pipeage Company, the Hite Natural Gas Company, the United Gas Fuel Company and the People's Natural Gas Company certain rights and privileges for the conveyance, distribution, and sale of natural gas.

The test well drilling at Connellsville for natural gas has reached a depth of over 1400 feet.

By an explosion of natural gas, caused by a leak from a main of the Chartiers Gas Company while making connections from the McWilliams well to its main line at Murrysville, Westmoreland County, on the 19th inst., seven persons were injured, four of them fatally. The explosion was followed by a fire that destroyed seven dwelling-houses. The fire was effectually extinguished on the 22d inst., by means of an immense smoke-stack, which was placed over the pipe and the flames smothered. It is stated that this accident will cost the company about $30,000.

A charter has been granted to the Ten Mile Oil and Gas Company of Washington, Pa.; capital, $10,000.

A bill in equity was filed in Common Pleas Court No. 2 at Pittsburg, on the 24th inst., by the Hite Natural Gas Company, Limited, asking for a perpetual injunction against the city of Pittsburg and E. M. Bigelow, Commissioner of Highways. The company is the owner of several wells that furnish 12,000,000 cubic feet of natural gas each day. The Hite Company laid a pipe on the bed of the Alleghany River beyond low-water mark.

A charter has been issued to the United Natural Gas Company to mine for natural gas in Venango, Forest, Butler, Armstrong, Clarion, Warren, Elk, and McKean counties, and to supply the gas to towns and cities in those counties. The capital is $2,500,000. The application for this charter originally included Buffalo and other points in New York, and it was a question whether a charter could be granted by Pennsylvania giving a corporation such wide latitude. The matter was referred to the attorney-general, who in an elaborate opinion decides that such a charter could not be granted, inasmuch as it conferred the right of eminent domain, under the act of 1885, to a State corporation that proposed acting in another State, and this State can not confer such a franchise on any corporation. The company was thereupon reorganized, and under this latest move has been chartered. It is stated that all of the stockholders are connected with the Standard Oil Company.

RUSSIA.

Cable dispatches announce that the government has taken steps to thoroughly develop the petroleum fields of the peninsula of Apsheron, on the west coast of the Caspian Sea. It has called a convention of scientists, engineers, and oil producers to meet at Baku, on the south side of the peninsula, on March 27th, to discuss plans for the promotion of the oil trade. Among the problems that this congress is desired by the government to solve are the best method for building up a large trade in the export of Russian petroleum, and the best standards and rules to adopt. It is also to consider the subject of exempting from duty all articles utilized in the business of producing and refining petroleum, and the best means to improve the harbor of Baku so as to facilitate the shipment of oil.

GENERAL MINING NEWS.

There appears to be a boom in the London mining market, judging by the number of American mines now offering there. We note the following:

THE ALTURAS GOLD, LIMITED.—Capital, £300,000, in £5 shares, of which 4000 shares are now offered for subscription. This company is formed to acquire and work a gold mine, situated at Atlanta, Alturas County, Idaho. The mine is stated to be a going and dividend-paying concern, returning about £4200 a month, from the working of only a 10-stamp mill; but with the additional milling capacity proposed to be created, the returns, it is believed, will be considerably increased. The abridged prospectus says: "In the report of Mr. P. O. Charles, M.E., the exposed ores are classified and valued at $5,894,940, ready for milling. It is calculated that there are over 500,000 tons of ore, in sight and in reserve; value, about £4,000,000 sterling." The ore is said to give $50 per ton in mill runs. The magnificence of the figures, in the value of the reserves, should make investors careful. The mine has not become known here as a dividend-payer, and we take little stock in such estimates.

THE ILEX GOLD SYNDICATE, LIMITED.—Capital, £10,000, in 40 shares of £250 each. Organized to purchase the Tiger quartz mine and the Tiger East Extension, Mokelumne Hill, Calaveras County, Cal.

THE ST. GEORGE GOLD MINING COMPANY, LIMITED.—Capital, £60,000, in 15,000 preference shares, and 45,000 ordinary shares. Organized "to purchase mineral grants, etc.," in Georgia, U. S. A.

THE DEXTER GOLD MINING COMPANY, LIMITED.—Capital, £75,000, in £1 shares. Organized to acquire freehold land and mineral property in Gilpin County, Colo.

UNITED STATES GOLD PLACER, LIMITED.—Capital, £150,000, in £1 shares; £10,000 shares offered for subscription. Property reported on by R. W. Rickard, of Rickard Brothers, London, and John G. Kelly, Mining Engineer, Denver, Colo. Mr. Kelly's estimate of profits, £592 a day. Estimates 50 cents a cubic yard for the gravel.

ARKANSAS.

MONTGOMERY COUNTY.

LOST LOUISIANA.—Work is pushed vigorously, and hoisting-works have been ordered.

OZARK.—This company has been incorporated with a capital stock of $5,000,000; 200,000 shares of $25 each. The ore found on the property is a black lead oxide, and is said to show, on chemical analysis, silver, 14½ per cent; lead, 31 per cent; quicksilver, 7 per cent. Active operations have begun.

CALIFORNIA.

MONO COUNTY—BODIE DISTRICT.

For the week ended the 13th inst.:

MONO.—There were shipped on the 13th inst. to San Francisco $8674.89 and to mill 148 tons of ore.

STANDARD CONSOLIDATED.—The mine looks well and the mill is running steadily. There were sent to mill 320 tons of ore. Bullion shipment made on the 9th valued at $6933.08.

SAN DIEGO COUNTY.

ELLA.—This mine has been bonded for $6000, and its sale is about to be consummated.

OWENS.—The hoisting-works are up, and pumps running. A twenty-stamp mill is to be erected in the spring.

STONEWALL.—Work continues at the mine with a full force. The mill is running day and night. The ledge is reported from four to thirty feet wide, and ore running from $12 to $50; average about $20.

CANADA

PROVINCE OF NOVA SCOTIA.

The Halifax *Critic* gives the following reports for February:

	Tons crushed.	Ounces gold.
Dars Hill, Salmon River	840	612
Rawdon Mine	95	305—10
Rawdon, Barss & McNaughton	60	135
Caribou	274	149—13
Stormont, Guysboro'	44¼	84⅛
Lake Catcha	13¼	13
Waverley	43	28

PROVINCE OF QUEBEC.

ORFORD COPPER AND SULPHUR COMPANY.—It is reported that this company has opened up a large body of pyrites richer than the average, at its mines in the eastern townships.

COLORADO.

CLEAR CREEK COUNTY.

CORRY CITY.—New ground is rapidly opening up. Work is pushed in every direction, and although most of it is on development, yet the mine is producing on an average $10,000 a month. Rising is in progress from the Diamond tunnel to the Corry shaft, which is also sinking. Several ore-streaks are exposed from which fine mineral is extracted.

KOHINOOR & DONALDSON.—Work has been started on the Kohinoor lode, Columbian Mountain.

CUSTER COUNTY.

BASSICK.—According to *Mine, Stock, and Rail*, this mine will probably be very soon in the hands of a new company, as the two parties hitherto struggling for the control have made up their differences, it seems. About $230,000 will be required to cover the total indebtedness, and it will take $100,000 more to put the mine into proper shape for economical operation. Among the reorganizers are Bassick, White, Brown, Dennis, Sullivan, and Dennis Ryan.

HUDSON.—This company, at Silver Cliff, has started for a steady run with the mill recently erected.

DOLORES COUNTY.

DOLORES VALLEY.—The tunnel run by this company to cut the Florence vein has already cut three small veins, one of which drains the tunnel of the flow of surface water that interfered to a small extent with the work.

GRAND VIEW MINING AND SMELTING COMPANY.—Mr. C. E. Palmer has now full charge of the company's interests in Rico and vicinity, in place of Mr. J. C. Grierson. As soon as a sufficient amount of coal can be burned to insure a long run, the furnace will be started up. The ore-bins are nearly full. The last lot of bullion, car No. 56, has been shipped, this being the last of the bullion turned out during the recent run of the smelter.

EAGLE COUNTY.

BLACK IRON.—Recent developments have induced the management to resume the extraction of mineral. The working force has been greatly increased. The mineral now produced is a gray sulphate of lead sand, mixed slightly with sulphate of lime. On an average, the ore will run eight to twelve ounces of silver to the ton, and from 45 to 50 per cent in lead.

LAKE COUNTY.

The Leadville *Herald-Democrat* reports the following:

The amount of new prospecting-work started in the Leadville District during the past few weeks is very great. In all portions of the camp, new shafts are sinking, many of them in well-selected places, and

the probabilities are, that quite a number of new mines will be opened in the near future. In addition to the new shafts now going down, a general revival of work is noticeable on old shafts, making the aggregate amount of exploration-work in progress larger than at any time for three or four years past.

Mr. Charles Stebbins has sold his sixteenth interest in the Colonel Sellers and Accident lodes, on Iron Hill, to S. B. Morgan, of Denver, for, it is said, $20,000. The transfer will not produce any change in the *personnel* of the management of the property. The price is considered very low.

CASTLE VIEW.—This shaft, on Carbonate Hill, has attained a depth of 506 feet and is sinking deeper. The last forty feet of shaft have gone through iron ore.

CLIMAX.—A small quantity of very high-grade galena ore has lately been extracted from this mine on Fryer Hill.

CONSOLIDATED VIRGINIA.—A third interest in this mine on Sugar Loaf Mountain, near Leadville, was sold for $10,000. The mine has for years been worked under the leasing system, and has paid fairly. With proper development, it promises to become productive and profitable.

HUMBOLDT MINING AND SMELTING COMPANY.—At the annual meeting, held at Leadville, it was shown that the lessees working the company's property are engaged in doing considerable exploration-work. The parties working the Modest Girl mine are under contract to sink the shaft to pay ore or second contact. The shaft now has a depth of 180 feet. Other lessees are working the Quartzite lode, and are driving an open adit into the south side of Carbonate Hill.

LEE BASIN.—The pumps have started in this shaft, and as soon as the water has been lowered and the level drained, work will be resumed.

OURAY COUNTY.

IRISH GIRL.—Mr. W. Weston has purchased from Mr. M. S. Corbett his fourth interest in this lode, for $5000. This lode is in the vicinity of the Silver Bell, and supposed to be traversed by the same ore-belt that runs through the Yankee Girl, Guston, and Silver Belle in the Red Mountain District.

PARK COUNTY.

LONDON.—Preparations are making to start this mine the beginning of next month.

PITKIN COUNTY.

CLEVELAND.—A bond, said to be for $50,000, has been taken on this group, situated near Ashcroft. A vein of mineral that mills 12 ounces silver to the ton has been shown up. A shaft now 50 feet deep will be sunk deeper.

DAKOTA.

LAWRENCE COUNTY.

BELT CONSOLIDATED.—This company, which owns the Bye-and-Bye, Jupiter Fraction, Belt, Dido, Little Mary, and Yuba claims at the Carbonate Camp, has been organized at Deadwood with a capital stock of $1,250,000, in 250,000 shares, par value $5 each. No treasury stock will be issued, but it is said that enough stock has already been placed at ten cents to warrant the company going on rapidly with development.

CALEDONIA.—Official reports show that the ore produced from the 425-foot level was 814 tons, and from the cave, 480 tons, making 1294 tons in all. The winze advanced 4½ feet; total, 66 feet. The south drift advanced 7 feet; total, 76 feet.

FATHER DE SMET.—During the week ended the 15th inst., there were extracted from the first, second, and third levels 2100 tons.

RUBY.—The company has decided to push developments on its properties as rapidly as possible. To defray expenses, an assessment of half a cent a share has been levied.

SITTING BULL.—The Cornish rolls in use at these concentrating-works having proved unsatisfactory, twenty stamps have been put in to take their place, and are now running.

IDAHO.

Reports from Nicholia state that the wages here are but $3.50 a day of twelve hours on the furnace, for furnace-man; helper, $3.25, twelve hours; miners, $3.50 a day.

DONAVAN.—The Wiswell mill has been at work on this group of mines over two months. During that time, it has successfully crushed and amalgamated about 10 tons a day.

MINNIE MOORE.—It is reported that a strike had been made in a cross-cut on the 600 level.

SALMON RIVER.—This company has been organized at Salt Lake City for the purpose of carrying on a general mining business. The capital stock is $2,500,000, in 250,000 shares of $10 each. The company owns and proposes to operate four claims, the Keno, Pacific, Old Cabin, and Little Fellow, in the Big Horse Mining District, Custer County.

MEXICO.

The *Mexican Financier* reports the following:

A St. Louis company has bought a gold mine westward from Culiacan in the State of Sinaloa, and has capitalized the property at $5,000,000. The company will at once expend $100,000 in new machinery.

FRANCISCO DEL ORO.—This mine, near Parral, has been sold to an English company for $50,000.

LA TRINIDAD.—The new concentration and reduction-works to be erected at these mines, Sonora, are to be built by Malther, Lind & Co., of San Francisco, and it is estimated that the new reduction-works will be of 300 tons capacity a day, with a crushing power of 500 tons.

SANTO DOMINGO.—This Zacatecas mine, sometimes called San Juan, is in bonanza.

MICHIGAN.

COPPER MINES.

MINNESOTA.—Mr. D. L. Demmon, of Boston, prominently connected with many other successful mining companies, has recently been appointed treasurer of this company, the property of which has been nominally abandoned for years and has been going to rust and waste since about 1878. With old-time methods and copper at 25 cents, the company did not make it pay, although there is known to be a stamp lode averaging over 2½ per cent of mineral, over a mile in length, and there is also a lode from which fifteen fathoms were broken as a test, and it yielded nearly 8 tons of mass and barrel copper, to say nothing of rich stamp copper. The new management thinks that it can make big pay if it can find half as good, and it is making arrangements preparatory to the resumption of work.

GOLD MINES.

COON.—This mine, near Ishpeming, is again starting up, the necessary capital to conduct operations having been furnished. Pumping machinery is erecting at the shaft, which is quite wet. The Coon yields rock containing a large percentage of copper ore, and iron pyrites; its gold is not free milling, and it will have to run high in the precious metals to warrant its treatment at a profit.

IRON MINES.

CALEDONIA.—Work at this mine has been suspended for the present, the pumping facilities now in use being found insufficient to cope with the water that makes into the mine from the Michigamme River.

CORNELL IRON MINING COMPANY.—This company has been organized for the purpose of working the Cornell mine.

IRON STAR.—The mine has been drained, and No. 1 shaft is getting into shape.

LAKE SUPERIOR.—The new shaft of this company, to connect with the eastern workings of its hematite mine, was holed about a week ago. Ground for this shaft was broken November 17th last, and three points of attack were made, two being in rises from lower levels. The distance sunk was 217 feet, 32 feet of which was drift, the remainder hematite jasper. One party raised 133 feet, the other 60. This makes a total of 410 feet in 89 days. The shaft is 11 by 11 feet. Two No. 2 Rand rock-drills were used in sinking. Where the risers and sinkers met, the center hole was not six inches out of line, a fact that speaks well for the ability of the company's engineer, Mr. H. B. Sturtevant. He used 75 stations in making the survey, and the accuracy of his calculations is a pleasing fact to all concerned.

MASTODON.—The mine will be run for all it is worth the present season. A contract for the delivery of 25,000 tons the coming season has been made, and the stock-pile at the mine is increasing at the rate of about 200 tons a day.

PAINT RIVER.—Work has begun in getting the mine ready for the season's operations.

PURITAN.—This company has about concluded negotiations for the disposal of its option in the Puritan mine and four sections of choice mineral land in the Gogebic range. The company holds an option on this property, the original cost being $25,000. This company has also sold its option on another piece of choice land in that vicinity for $30,000, which, it is said, cost $5000 last summer.

MONTANA.

BEAVER HEAD COUNTY.

HECLA CONSOLIDATED.—Official reports give the production for February as follows: 129·048 ounces of gold; 44,381·44 ounces of silver; 459,742 pounds of lead; and 5895 pounds of copper.

LEWIS & CLARKE COUNTY.

BOSTON & MONTANA.—Official reports dated March 19th state the total so far shipped for March, $19,515 Cross-cut on 500 level is in 30 feet; water is coming in in face of cross-cut vein probably 10 feet away. Mine looks well. Mill running all right.

HOMESTAKE.—Helena papers state that this mine is the richest gold mine in Montana, yielding on the average $100 a ton in gold, and the expense of mining and milling it is only $8, making a net profit of over $90 on every ton of the ore. The mill will start up again soon. During the winter, operations have been confined to taking out ore.

NEVADA.

ELKO COUNTY.

NEVADA VS. NORTH BELLE ISLE.—The Nevada Mining Company, of Tuscarora, filed papers in a suit against the North Belle Isle Company, at the District Court at Elko, on the 11th inst., for the recovery of damages in the sum of $40,000; also, to require that the defendant show cause why a survey of the Belle Isle premises should not be made. Immediately thereafter counsel for defendant filed a petition and bond for the removal of the case to the United States Circuit Court at Carson. Hearing for the case was set on the 18th inst.

EUREKA COUNTY.

ALBION AND RICHMOND.—The prospects for a compromise of the differences of these companies are said to be favorable and likely to occur in the near future

EUREKA.—Some 60 tributers are working in the mine. At the company's reduction-works, upward of 1500 tons of ore have collected.

LYON COUNTY.

COMSTOCK MILL AND MINING COMPANY.—Senator John P. Jones is reported to have sold the Eureka mill property to this company.

KOSSUTH.—It is rumored that this mine at Silver City has been purchased by Senator Jones. Hoisting-works are to be erected and the extraction of ore is to begin at once. The ore will be crushed and concentrated by the process now in successful operation at the Brunswick mill—the Golden Gate concentrators.

DAYTON.—It is rumored that this mine, below Silver City, will be started up April 1st. This mine is said to contain a large deposit of low-grade ore in which gold predominates. It is claimed that, by adopting the concentrating process now in successful operation at the Brunswick mill, the ore can be treated, leaving a margin after deducting the cost of extraction, transportation, and crushing. The mine is convenient to the river, and the cost of transporting ore to the mills will therefore be only nominal.

STOREY COUNTY—COMSTOCK LODE.

COMSTOCK DYNAMO-ELECTRIC LIGHT AND MOTIVE POWER COMPANY.—This company has been organized in Virginia City. It has secured a water-right on the Truckee River, where a dynamo machine will be set up to transmit power for the purpose of illuminating the Sutro Tunnel and the Comstock mines, and furnishing motive power for quartz mills to be erected convenient to large deposits of low-grade ore. A dynamo machine will be set up on the Truckee, capable of receiving the entire motive power of the river. The power will be furnished by a Leffel wheel, propelled by the full head of water in that stream with a 100-foot fall.

CONSOLIDATED CALIFORNIA & VIRGINIA.—During the week ended the 13th inst., 1102 tons of ore were shipped to the Morgan mill, and 373 tons to the Eureka mill. The average value of ore milled during the same period, according to assays from battery samples, was $12.31 a ton for that crushed at the Morgan mill, and $7.85 for that crushed at the Eureka mill. The northwest drift on the 1650 level has reached the stopes in that end of the mine, and preparations are now in progress for the extraction of ore.

HALE & NORCROSS.—From the superintendent's report, presented at the annual meeting, we take the following: Finding this quantity and quality of ore at this great depth (from 2900 to 3100 feet) in a perfect fissure surrounded by the most fertile ore-bearing material and the formation identical with that of the largest ore-bodies heretofore discovered on the Comstock, inspires the hope and belief that the present find

will not prove an exception to the rule as shown by the past history of the lode, and that the patient stockholders of this company will soon be rewarded with a bonanza equaling any heretofore uncovered on the great lode. The financial report showed receipts during the past year of $322,280, and expenditures of $323,494.65, leaving a balance against the company at date of $1284.70, with $54,867.50 remaining to be paid in on the pending assessment.

NEWFOUNDLAND.

At Little Bay mine, operations have been resumed on an extended scale. It is reported that 200 men are at work, and that when spring opens there is prospect of a much larger force being employed. The prospects of the mine are said to be excellent. It is also stated that a new and valuable discovery of ore has been made at Betts Cove, where of late a little mining has been done.

NEW MEXICO.

SIERRA COUNTY.

Sierra Grande.—The ore treated at the lixiviation-works at Lake Valley is taken from the old dumps. The only work at present done in the mine is a small amount of prospecting.

NORTH CAROLINA.

CABARRUS COUNTY.

Shive.—On this mine, a new shaft has been sunk to the depth of 25 feet. Some of the ore produced was sent to the Yadkin Chlorination-Works at Salisbury, for treatment, and yielded an average of more than $20 to the ton. The property embraces 45 acres. The vein is said to be from 2½ to 3 feet in width, and is traceable for more than a mile. The ore is a brown free-milling quartz.

GRANVILLE COUNTY.

Big American Copper Mining Company.—Operations have been resumed on the company's tract, a short distance from Blue Wing. As soon as the work of unwatering the mine is finished, sinking will begin.

ROWAN COUNTY.

Big Bonanza.—This mine is attracting considerable attention. It is said that the vein on the property is from 3 to 5 feet wide; has been opened to a depth of 30 feet; and is traceable for 1200 feet. It has been cut into at three places in this length, and the ore-body found to be uniform. The ore is a free-milling brown quartz, of low grade.

PENNSYLVANIA.

Reports state that there is a better outlook for the iron ore industry along the East Pennsylvania Railroad between Reading and Allentown. A number of mines have resumed operations, and others will start up around Topton, Lyons, and Fleetwood. An advance of from 10 to 20 per cent will be made in wages.

Sunbury Prospecting Company.—This company has been granted a charter for the purpose of prospecting for oil, gas, and minerals; capital, $3000.

SOUTH AMERICA.

PATAGONIA.

The reports of discoveries of gold in Patagonia have excited the greatest interest. It appears that with regard to the existence of gold in the valley of the Rio Gallegos there is no manner of doubt. According to the Buenos Ayres *Standard*, the Argentine government was in possession of more information about the gold discoveries than had been given to the public, and was about to dispatch two gunboats to protect life and property.

UTAH.

JUAB COUNTY.

Beck-Bullion.—The superintendent of these mines, at Eureka, reports that, since taking charge of the property last fall, he has sunk the shaft from the 200 down to the 300-foot level and now they are sinking to the 400-foot. Underground prospecting is going on, and the property is improving in appearance. They are taking out about thirty tons of ore a day, but owing to the bad condition of the roads, only half that amount is sent out. The difficulty in getting lumber for use about the mine has retarded work this winter. The improvements making in the shape of new machinery will greatly facilitate in extracting ore.

SALT LAKE COUNTY.

Brooklyn.—A suit involving the sum of $50,000 was in progress before Judge Zane, on jury trial, at Salt Lake City, on the 19th inst. On August 28th, James Trihay, a miner in the employ of the Brooklyn lead mine, of Bingham, was hurt by a falling boulder, and now sues the company for damages.

Yosemite.—The owners of this mine at Bingham have been making improvements this winter. They bought the old Revere dry concentrator mill in Butterfield Cañon, and have changed it to a wet concentrator, with a capacity of handling eighty tons a day of twenty-four hours. The mine has a large body of pyritous ore running from ten to twelve per cent in lead, which concentrates to forty per cent lead, while the carbonate ore concentrates to sixty per cent lead. The mill has been tested and been demonstrated to work up so closely that the tailings show only three and two tenths per cent lead. It cost about $2500 to reconstruct the mill. The mill is one and a half miles from the mine. To save in the cost of hauling ore down, the company has purchased the Hallidie wire rope tramway formerly used by the Chicago Company in Dry Cañon, which will make the cost of getting ore down very small.

SUMMIT COUNTY.

Daly.—The product of the Daly for the week ended the 17 inst. was $7609.36 of ore. The Marsac mill is getting down to better work, the amalgamation now exceeding ninety per cent.

TOOELE COUNTY.

Calumet.—A good strike has been made in the lower workings, and the whole property is getting into shape for beginning shipments on April 1st. Both wet and dry tests are making, with the view of settling upon the mill to be built.

Honorine.—But twenty men are kept at work on this property, and it is stated on good authority that shipments on a large scale will be resumed April 1st.

Pascoe.—This smelter at Stockton is running on tailings from the old Walker Brothers' mill in Ophir Cañon, mixed with some ore, but chiefly with concentrates taken from the old slag-pile of the smelter. This slag was dumped there several years ago by the Waterman Company, and it is said to be so rich as to be a fair bonanza to the present owner.

Southport.—This mine, which was abandoned twelve years ago, has been pumped out and the *débris* removed. Ore was found along the shaft for fifty feet, of good grade and from eight to twenty inches in width. The ore is treated at Foote's sampler at Stockton. This property promises well, and it is believed that many of the other claims long since abandoned in this district will yet become good properties.

WISCONSIN.

National Land and Iron Company.—This company has been incorporated in Milwaukee by B. J. Lennox, W. J. Anderson, J. F. Tucker, W. R. Morrison, and C. S. Osborn, with a capital stock of $30,000. The object is to deal in agricultural, timber, and mineral lands.

BULLION PRODUCTION FOR 1886—SPECIAL OFFICIAL REPORTS.

Mines.	States.	Month of February.	Year from Jan. 1st, 1886.
		$	$
Alice, G. S	Mont...	92,655	166,714
Boston & Montana, G	Mont...	67,336	148 9 9
Caledonia, G.	Dak....	16,812	42 236
Christy, S	Utah...	...	23,555
Chrysolite, S	Colo...	...	17,090
Colorado Central, S	Colo...	23,332	48,176
Daly, S	Utah...	...	§28.445
Deadwood-Terra, G	Dak....	31,294	64,346
Derbec Blue Grav., G. S	Cal....	13,962	29,721
Elkhorn, G. S	Mont...	.....	23,456
Eureka, S. L	Nev. ..	.....	15,905
Father de Smet, G	Dak....	17,901	35,353
Freeland, G. S. C	Colo...	24.905	41,092
Granite Mountain, S	Mont...	138,800	252,400
Hecla, G. S. C. L	Mont...	78,859	169,146
Homestake, G	Dak....	94,098	194 843
Hope, S	Mont..	6,200	12,400
Iron Hill, S	Dak....	36 120	87,000
Lexington, G S	Mont...	64,738	127,588
Montana Limited, G. S	Mont...	110,100	210,931
Moulton, G. S	Mont...	....	62,050
New Pittsburg, S	Colo....	920	2,980
Ontario, S	Utah...	212,321	384,686
Plymouth Consolidated, G	Cal....	45,611	101,294
Plutus, G. L. C	Colo...	28 470	53,096
Ropes, G. S	Mich...	.....	3,151
Standard Consolidated, G	Cal .	....	19,309
Tombstone, G. S. L	Ariz....	*69,440	135,622
Total		.....	$2,504,808

G., gold; S., silver; L., lead; C., copper; M., mica. Silver valued by the different companies from $1@$1.29 per ounce: gold, $20.67. *Not including value of lead and copper. †Royalty. ‡Net. §Ore sales. No shipments during month mentioned. ** Not official.

MARKETS.

Silver.

New York, Friday Evening, March 26.

Date.	London. Pence.	N. Y. Cents.	Date.	London. Pence.	N. Y. Cents.
Mch. 20	46¾	102¼	Mch. 24	46 11-16	102⅛
22	46¾	102¼	25	46 11-16	...
23	46 11-16	102⅛	26	46¾	102⅛

There is no change in silver, abroad or here, worthy of note.

The recent heavy gold shipments, which were made mostly to purchase Spanish silver to pay for the Cuban sugar crop, have ceased, and the heavy foreign purchases of railroad securities in this market during the week may even turn the tide this way.

Foreign Bank Statements.—The governors of the Bank of England, at their regular weekly meeting, made no change in the bank's minimum rate of discount, and it remains at 2 per cent. During the week, the bank gained £81,913 bullion; and the proportion of its reserve to its liabilities was unchanged at $41\frac{3}{16}$, against 28 per cent at this date last year. On the 25th inst., the bank gained £65,000 on balance. The weekly statement of the Bank of France shows a gain of 14,689,000 francs gold, and a gain of 5,514,000 francs silver.

Copper.—The copper market is quiet but firm, and quotations are nominally unchanged at 11½c. for Lake, and 10¼@10⅜c. for Orford and Baltimore, according to quality. There is still an impression that manufacturers will have to pay nearly 12 cents for the next contracts of Lake. Consumption continues very large, and production of Lake copper is increasing somewhat, and some of the Montana companies, notably the Parrot, are pushing output, and are said to be producing 1¼ million pounds a month.

The Montana Copper Company wisely keeps its works closed, waiting for remunerative prices. The Anaconda is pushing its output of ore, and is increasing concentrating capacity; but its famous dump is said to be pretty well worked up, and much of the ore going to the mill, we are informed, upon something more than mere rumor, runs but little over 6½ per cent, so that the output of copper from this great mine will probably decline, even though the quantity of ore treated may increase.

The foreign market is firmer, and the impression that it will advance is more apparent in all the reports we receive than we have seen it at any time during the past year. We learn that the Wallaroo copper, to the amount of about 6000 tons, has been placed with French manufacturers. This relieved the market of a heavy load.

We give editorially in this issue some remarks upon the Boleo Company's prospects, from which it would appear that, however much this enterprise may affect the markets temporarily by a large output of copper, it is not likely to long remain a producer while copper is less than £46 a ton. Cables to the Metal Exchange to-day quote Chili Bars £42 10s.; Best Selected, £47 10s.

Tin.—This market is very dull and without change at 20·75@20·85c. The London market is cabled to-day £93 12s. 6d. for spot Straits, and £94 for three months. About 85 tons have been sold during the week at the Metal Exchange at 20·70@20·75c. for March, April, and May.

Lead.—About 400 tons of Richmond lead have been sold here during the week at 4·90c., and about 200 tons Foreign at the same figure, but manufacturers report to us that they can not buy at less than 5 cents. The market is quiet but firm. The strikes on the railroads in the West so interfere with deliveries of lead that there is an unwillingness to depend on that source of supply.

Cables to the Metal Exchange quote Soft Spanish at £13 5s.; English, the same.

Lead Pipe we quote here at 5·40@5·50c. net, and Sheet-Lead 6·20@6·25c. net. Drop Shot, 5¾c. Buck and Chilled, 6¾c. a pound, in 25-pound bags. Shot in 5-pound bags, about ¼ cent a pound more.

Messrs. John Wahl & Co., of St. Louis, telegraph to us as follows to-day:

The market still retains the features that have prominently characterized it during the past few weeks. It rules strong but quiet. The strike continues, and greatly interferes with business generally, and neither sellers nor buyers feel like making new contracts, n

knowing when deliveries can be made. We may quote both Hard and Soft lead worth 4·75@4·80c.

Spelter.—This metal is unchanged at 4·50@4·65c., according to quality. New Jersey spelter is worth 6¼c. New Jersey White Oxide, 3½@4c., according to grade. Silesian is quoted by cable to-day £14 12s. 6d.

Sheet-Zinc is quoted 5¼@5½c.

Antimony.—This market remains quiet and steady at 8½@9c. for Hallett's, and 9¾c. for Cookson's.

London cables quote Hallett's £35 10s., which is an advance of £1.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March 26.

American Pig.—This market is very quiet, and there is no indication of an early advance in prices; in fact, iron men here appear to take no stock in the "booming" reports that come from Philadelphia and some other places. We continue to quote $18@$18.50 for No. 1 X; $17@$17.50 for No. 2 X; and $16@$17 for Forge, standard Lehigh brands, tide-water delivery. For special irons, $1@$1.50 more is asked. Southern irons are in some cases held at an advance of 50 cents over recent prices here, but very little of it goes into consumption.

Scotch Pig.—This market is dull, and may be quoted as follows: Coltness, $20.50; Summerlee, $20; Gartsherrie, $19.75; Dalmellington, $19.25; Eglinton, $18. Cables to the Metal Exchange to-day quote Coltness 46s. 9d.; Summerlee, 46s. 6d.; Langloan, 44s.; Gartsherrie, 43s.; Glengarnock, 42s. 6d.; Dalmellington, 41s.; Eglinton, 39s. 6d. Freights are still high.

Bessemer Pig.—The market is quiet, and little doing. We quote Domestic at $18@$18.50 at the furnace, and Foreign ex ship about 50 cents more.

Spiegeleisen.—This market is weaker, and sales have been made of English 20 per cent below $27. We quote English, $26.75@$27; German, $26.25@$26.50. Eighty per cent ferro manganese is quoted at $67@$67.50.

Structural Iron and Steel.—There is nothing worthy of note in the market. A fair business in all kinds of manufactured iron is done, and prices remain unchanged. We quote Angles, 2@2·10c. delivered; Tees, 2·35c.; Iron Beams and Channels, 3c. for American from dock.

Plate Iron.—Common Tank, 2@2·15c.; Refined, 2¼c.; Flange iron, 3·4@3·5c.; Extra Flange, 4@4·25c.

Bar Iron.—Refined we quote at 1·80@1·95c.; Common, 1·55@1·70c. Store prices are ·10@·20 higher.

Steel Plates.—We quote 2½c. for Tank; 3@3¼c. for Boiler and Ship Plates; 3¾@4c. for Flanges; 4¼@5¼c. for Extra Flange and Fire-Box Plate.

Merchant Steel.—American Tool Steel, 8@10c.; special qualities, 12@18c.; Crucible Machinery, 4½@5½c.; Bessemer and Open-Hearth Machinery, 2½@2¾c.

Steel Rails.—Very little is doing, most of the mills being unwilling to take orders; $34@$35 are the ruling prices, but the mills are quite independent about making sales.

Old Rails.—We hear of sales of 1000 tons English Double-Heads to arrive at $21, and of 100 tons Tees at $20. The market is weak, considerable quantities offering. We quote $20@$21.

Scrap.—Stocks here are small and quotations are unchanged at about $20@$21 for choice lots.

Crop Ends are quoted at about $22.

Philadelphia. March 25.

[From our Special Correspondent.]

Work opens next Monday in several ore-banks in this State and New Jersey, at wages ranging from 10 to 15 cents a day higher. Quite a number of ore contracts have been placed within a few days at only a sufficient advance to justify the increased cost.

Pig-Iron.—Sales of Forge iron were made this week in from one to 300-ton lots at prices ranging from $15.50@$16.50, with plenty of inquiry for standard and special brands, without much business. Special brands are scarce, and makers still claim the belief that in thirty or sixty days they will be able to sell at an advance all the iron they will then have to spare. The abor agitations are causing a good deal of trouble and some unfortunate delays in business. A few lots of nferior Forge were sold this week at what seem to be concessions, namely, $15.50 for iron for which $16 has been asked, but spot cash was the inducement. Four or five furnaces will be repaired during the next ninety days. Nothing new has taken place in regard to freight rates, or in coal prices, but a slight advance is looked for all around, in view of the adjustment of the combination matters. Foundry iron is still very strong, though very few lots have been moving, and these only of small amounts; 25 to 100-ton lots of No. 1 have been ordered for April and May delivery at $19.

Bessemer Iron.—The Bessemer market is entirely without feature. Quotations were made to-day at $19.50.

Spiegeleisen.—One or two steel rail companies have been making inquiries for spiegeleisen, and are about placing contracts for a few thousand tons for summer shipment.

Muck-Bars.—A little business has been done, and quotations range all the way from $29.50@$31. A few small lots are moving.

Merchant Bar.—The local manufacturers report business dull, and attribute the dullness to the strikes. The interior mills report a little improvement for common iron, and sales running into several hundred tons at $1.50@$1.65, according to quality. Refined iron is without much inquiry, although there is no weakness.

Nails.—The nail trade is steadily improving, the past week's business having brought out a good many unexpected orders. Some makers are looking for a further advance early in April, and are quoted nominally at $2.40@$2.50. The demands this year will be heavy.

Plate Iron.—Small lots of Plate iron are selling at 2c. Shell and flange irons are in better demand, and considerable fire-box has been called for for locomotive and other requirements. The locomotive-works in this and New York State are booking quite a number of additional orders, and a better feeling prevails.

Sheet-Iron.—The quotations on sheet-iron range from 3½@4c., according to gauge, with an urgent demand, but, as usual, confined to only small lots.

Structural Iron.—Several inquiries have been made concerning supplies of structural iron, for the summer; but the business transacted has been for small lots only, on a basis of 1 90c. for Angles and 3c. for Beams and Channels. It is understood that there are projects in hand concerning which specifications have been in part received, that will call for between three and four thousand tons, and which some of the Eastern mills expect to secure.

Steel Rails.—The demand for steel rails has apparently subsided, but there is inquiry in the market. The quotations given on 5000-ton lots to-day were $34@$34.50. A good deal of business is done in small lots, and one or two authorities say that, during April, the production will be pretty well cleaned up.

Old Rails.—Old rails are scarce, and very few are wanted, and negotiations are likely to close in a few days, with two or three companies in the East to take up old rails. Prices run from $21@$23.

Scrap.—No. 1 Scrap is in good demand, and large lots are arriving.

Pittsburg. March 25.

[From our Special Correspondent.]

Notwithstanding the large transactions in the various kinds of pig-iron, there is still a good inquiry, and a good deal of metal is changing hands. Prices have more than held their own in certain descriptions, while others are slightly shaded. On the whole, the market shows a remarkable steadiness. While there is no actual change in the position, it must be conceded that recent developments are not of a character to inspire much confidence. The effect of the strikes on business can hardly be estimated. As a matter of fact, there is far less business in sight than there was a month ago. One thing is evident—higher prices for iron means inviting foreign competition. Are we prepared for that?

Pig-Iron.—The current rates are as follows:

Coke or bituminous:	Lake ore.	Native ore.
Foundry No. 1	$17 50@$18.00	$17.50@$18.00
Foundry No. 2	16.75@ 17.25	16.50@ 17 00
Gray Forge No. 3	15.75@ 16.25	15.50@ 16.00
" " No. 4	15.25@ 15.50	....@ .....
White	14.50@ 15 00	14.50@ 15.00
Mottled	14.50@ 15.00	14.50@ 15.00
Bessemer	19.00@ 19.50	.....@ .....
Charcoal:		
Foundry No. 1	21.50@ 22.50	
Foundry No. 2	21.00@	
Cold-Blast	25.00@ 28.00	
Warm-Blast	18.00@ 24.00	

Muck-Bars.—The demand has fallen off. Buyers are less anxious. We hear of sales $27.25 cash.

Spiegel.—Steady, unchanged, held firmly, $28.50@$29.

Steel Slabs.—Prices maintained, $29@$33.

Steel Rail Crop Ends.—$24 is the current rate.

Steel Bloom Ends.—Last sale reported was at $23.

Old Iron Rails.—Market weaker. We hear of sales at $22.50.

Old Steel Rails.—Held at $22@$22.50. No sales reported.

Wrought Scrap.—Firm, but less active. No. 1 is $19.50@$20; No. 2, $17@$18.

Steel Rails.—Firmer and higher; held at $36, being an advance. Light sections, $35@$42.

Bar Iron.—Demand moderate. Sellers complain of low prices—1·70@1·75c. a pound.

Nails.—Our nail mills are all idle. Neither side shows any signs of giving way. It will be one year on the last day of May since a nail was made in this city or vicinity. Notwithstanding this fact, nails are selling at $2.25@$2.30 per 100-pound keg.

SALES IN PITTSBURG.

1000 tons	Bessemer Lake ore		$19.00@$19.50	
1200 "	Gray Forge Lake ore		$16.50	cash
100 "	" "	all ore	18.50	4 mos.
1000 "	" "	Native ore	16.00	cash
400 "	" "	"	16.25	"
100 "	Foundry, No. 1	"	18.50	"
1000 "	Gray Forge	"	16.15	"
100 "	Foundry, No. 1, charcoal		22.50	"
100 "	" " 1,	"	21.50	"
100 "	" " 1,	"	24.00	"
500 "	Muck Bars		28.50	"
1000 "	"		27.75	"
800 "	Old Rails		22.50	"

Louisville, Ky. March 25.

[Reported by GEORGE H. HULL & CO.]

The market for pig-iron is quiet. The demand is small and offers light. It is likely that this condition of things may last for some time, as most furnaces can do no more for some weeks than to fill the orders booked; on the other hand, most consumers have purchased all the iron they will need for a corresponding length of time. There seems to be no disposition to lower prices, and one furnace that has a little iron to sell has advanced the price fifty cents, and claims it can market all it can make at the advance.

We quote for cash as below:

PIG-IRON.

Southern Coke No. 1, Foundry	$18.00@$18 50
" " No. 2, "	17.00@ 17.50
" " No. 2½, "	16.50@ 17.00
Hanging Rock Coke, No. 1, Foundry	17.75@ 18.50
" " Charcoal, No. 1, Foundry	20.00@ 21.00
Southern Charcoal, No. 1, Foundry	18.00@ 19.00
Silver Gray, different grades	15.50@ 16.50
Southern Coke, No. 1 Mill, Neutral	16.00@ 16.50
" " No 2 " "	15.00@ 15.50
" " No. 1 " Cold Short	15.50@ 16.00
" Charcoal, No. 1 Mill	17.50@ 18.00
White and Mottled, different grades	13.00@ 14.50
Southern Car-Wheel, Standard Brands	25.00@ 26.00
" " " Other "	21.00@ 22.00
Hanging Rock, Cold Blast	27.00@ 28.00
" " Warm Blast	21.00@ 22.00

COAL TRADE REVIEW.

NEW YORK, Friday Evening, March 26.

Statistics.

Production Anthracite Coal for week ended March 20th, and year from January 1st:

TONS OF 2240 LBS.	1886.		1885.	
	Week.	Year.	Week.	Year.
P. & Read. RR. Co.	199,418	2,027,516	196,090	2,032,492
L. V. RR. Co.	121,147	1,299,232	4,449	791,023
D. L. & W. RR. Co.	109,331	1,220,101	73,370	780,659
D., & H. Canal Co.	70,547	885,907	42,681	514,182
Penna. RR.	73,347	698,804	52,613	582,203
Penna. Coal Co.	18,422	230,019	9,301	216,491
Total	589,212	6,361,579	378,504	4,917,050
Increase	210,708	1,444,529		
Decrease				

* Estimated.

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1881	5,565,210	1883	5,616,217
1882	4,897,703	1884	4,903,584

Production of Coke on line of Pennsylvania RR. for week ended March 20th, and year from January 1st: Tons of 2000 pounds.

	1886.		1885.	
	Week.	Year.	Week.	Year.
Allegheny Region.	3,616	40,725	3,667	41,506
West Penn. RR.	1,906	19,690	932	3,907
Southwest Penn. RR	55,199	380,306	35,932	401,972
Penn. & W. Region	6,386	74,368	4,248	59,512
Monongahela	3,300	16,348	2,005	16,095
Pittsburg Region.				
Snow Shoe	946	9,064	235	3,837
Total	71,353	540,501	47,019	526,829

Production Bituminous Coal for week ended March 20th, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1886. Week.	1886. Year.	1885. Week.	1885. Year.
Phila. & Erie RR...	24	407	.....	...
*Cumberland, Md..	1,332	369,633	55,740	408.573
*Barclay, Pa.	3,166	45,338	6,568	62,842
*Broad Top, Pa.				
H. & Broad Top RR.	†	59,787	3,840	34,334
East Broad Top....	.....	.....	.....	.....
Clearfield Region, Pa.				
Snow Shoe.....	3,172	34,098	4,730	48,703
Karthaus (Keating)	5,252	30,389	1,563	37.200
Tyrone & Clearfield	2,583	538,418	63,991	692,756
Alleghany Region, Pa.				
Gallitzin & Mountain....	12,270	139,352	9,952	112,917
Total..... ..	27,799	1,217.422	146,384	1,397,325

* Tons of 2240 lbs.
† Report not received.

WESTERN SHIPMENTS.‡

Pittsburg Region, Pa.				
West Penn RR.....	6,276	53.652	5,092	55,903
SouthwestPenn.RR.	3,519	25,882	1,918	22,881
Pennsylvania RR...	2.142	44,655	4,379	50,628
Westmoreland Region, Pa.				
Pennsylvania RR...	15,580	288,250	2,762	233,913
Monongahela Region, Pa.				
Pennsylvania RR...	5,387	39,715	753	43,008
Total.....	32,904	452,154	14,904	406,333
Grand total.....	60,703	1,669,576	161,288	1,803,658

‡ Considerable gas-coal shipped East, of which no division is made in report.

Anthracite.

Up to Monday night, there was quietness and the greatest depression in the coal trade. Since then, there has been great activity and much excitement.

On Monday night, all of the gentlemen who usually figure in coal combinations, excepting Mr. Gowen, met at the house of Mr. J. Pierpont Morgan, in this city, and did not leave there until two o'clock the next morning. As a result of this meeting, it is announced that a combination to control the anthracite coal business for one year from April 1st was practically agreed upon. President John King, of the Erie road, is President of the Association, and President Joseph S. Harris, of the Lehigh Coal and Navigation Company, Secretary. The points determined were, that the basis of allotment shall be 33,500,000 tons; that an advance of 25 cents a ton be made immediately; that production be curtailed to 2,000,000 tons for April; and that any company exceeding its quota shall pay into the association 50 cents a ton, to be equitably divided among those who do not mine their quota. The most important part of a combination, however, was left unfinished, namely, the fixing of the percentages. It was stated that these were practically agreed to, but that it was necessary that another meeting should be called to settle them. This will take place on Monday at the Pennsylvania Coal Company's office. We have reason to believe that there will be a fresh contest at that time, but still feel that but a few days are necessary to the accomplishment of an arrangement.

We have frequently stated that, when a combination was formed, it would come as a great surprise, and when the situation was at its worst. This movement was as great a surprise as the coal trade has ever been treated to, and it is a very welcome one. Until the arrangement is complete, it is useless to discuss it to any great extent. Those who are familiar with all the details proposed pronounce it the strongest combination ever formed. There is, however, one feature to it that does not strike us favorably, and that is the high basis of allotment. Of course, at the start, it is understood that, if the market will not take more than 32,000,000 tons at fair prices, only that quantity will be mined. All past experience has shown, however, that it is easier to increase an allotment 4,000,000 tons if the market wants the coal, than to cut it down 1,000,000 tons if it does not want it. Furthermore, it is probable that the arrangement will begin with about 1,200,000 tons of coal on hand, which, to leave an average stock at the end of the year, would actually bring the business of the twelve months up to 34,000,000 tons. It is not improbable that the market will take this quantity; but the most sanguine can not expect more, while there are many causes that might keep it down to last year's production, which was nearly 2,400,000 tons less.

The plans for the pooling arrangement do not seem to have been perfected yet, nor to be generally comprehended. This is not a new feature, although it has not been tried for years. The last time it was a part of the arrangement, it was not observed at all, and until Reading is put upon its feet, we do not see how it can be now.

Prices were generally advanced 25 cents a ton on Tuesday, and there is practically no coal obtainable under the new rates. The representative of the Associated Press announced in his dispatches on Monday night, that the presidents were to meet, and on Tuesday morning it was known all over the United States. This caused buyers to avail themselves of all options and to make claims for all the coal possible at old prices. A very large amount of orders was booked in this way.

A prominent gentleman remarked to us that, if he had met all the claims made on him upon this basis, he would not have had to sell much more coal during the year. Although, as before stated, a great deal of coal was booked in this way, there has been an effort to accept as few orders as possible, as the prices were too low to make them desirable in the face of a prospective liberal advance. If Monday's meeting should prove thoroughly harmonious, it is not improbable that another advance in the price of stove coal will soon follow.

We quote ordinary free-burning coals f. o. b. as follows:

	Week ended March 26.	Week ended March 19.	Week ended March 12.
Lump..	$2.85@ ...	$2.70@$2.80	$2.70@$3.00
Steamboat .	2.85@	2.70@ 2.80	2.70@ 3.00
Broken.	2.85@	2.55@ 2.70	2.60@ 2.80
Egg	2.85@	2.55@ 2.70	2 60@ 2 80
Stove	3.25@	2.85@ 3.10	3.00@ 3.10
Chestnut...	2.85@$3.00	2.75@ 3.10	2.80@ 3.00
Pea	1.75@ 2.00	1.50@ 1.75	1.50@ 1.75
Buckwheat..	1.50@	1.20@ 1.50	1.20@ 1.50
Dust	1.15@	1.00@ 1.10	1.00@ 1.10

Bituminous.

The demand is large, the supply very small, and prices fancy. The strike is still in full force with the largest shippers. The entire Cumberland District is out, and likely to continue so. A few of the smaller and weaker operators in the Clearfield and Broad Top fields have paid an advance to their men. There is a suspicion that in one or two cases they were not able financially to continue the strike longer. The Beech Creek mines have continued to work steadily, and are making a large output and a good harvest. But worst of all, it is said that the mines on the Chesapeake & Ohio and the Norfolk & Western roads have not been idle an hour, while the strike, which is quite unwarranted, seems to have been inspired from that section. It looks as though the George's Creek and Clearfield miners had been drawn into an arrangement, where they are made dupes. In one way or another, there is now enough coal mining to make the entire movement a failure. In fact, an effort to corner the supply of fuel is as sure to fail as would an effort to corner air or water. The strongest shippers are well provided for all early wants, and will not be compelled to accede to the demands of the men from an inability to meet their most pressing contracts. Considerable coal will reach this market by water from unexpected sources. In addition to the English coal on the way and to come, the Nova Scotia mines are arranging to ship this way. The most serious matter, however, affecting both miners and operators, is the large amount of trade that is taken by the anthracite shippers. For every ton of trade taken by outside competitors, there will be one ton less to be mined by the miners now on strike, and, should the strike not terminate soon, this may become very serious indeed. All of the Cumberland companies have notified the miners to remove their tools from the mines, and that they are discharged. They will only re-employ a force adequate to their wants, which will be considerably less than in ordinary years.

The partial resumption of the men at advanced rates during the past week is an absolute guarantee of the failure of the general movement.

This is a sample of what the coal trade writes us concerning our reports:

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I am glad to see that there is one paper that reports the coal trade that is not afraid to report things as they are. They are too apt to be always on the bull side, no matter what the real outlook is. It is the truth that the country trade wants to get at, and then we can form our own opinions, independently of what the New York jobber would like to have us believe.

BURLINGTON, VT., March 19.

Buffalo. March 25.

[From our Special Correspondent.]

The details of the agreement made by the anthracite coal men you are well posted on, and therefore I need only say that every dealer that has commented on them appears to be satisfied with the present condition of affairs, and the prospects are equally satisfactory.

The retail prices of anthracite coal at Buffalo will not be changed before the 1st of May, as far as can be learned.

The bituminous coal trade is very much unsettled; dealers are conservative, and showed little if any disposition to sell on the receipt of the first news of the strike; but that feeling has about worn off, and they are willing to talk business.

Mr. Thomas Hodgson, the agent here for the Pennsylvania Coal Company, says that "the rise in the anthracite coal market was not due to any action taken at the New York meeting; it advanced in the usual way. Mr. Roberts, the President of the Pennsylvania Company, was present at the meeting, and I have learned that the output from April 1st, 1886, to April 1st, 1887, is not to exceed 32,500,000 tons; and these figures are less than those telegraphed in dispatches."

A number of coal vessel owners are talking of taking united action to prevent the paying of freight on coal in gross tons, as they hold that shippers will be unwilling to give more for gross than for net tons.

The ice left Buffalo River on Sunday last, going out without causing any damage. An early opening of Lake Erie at this point may be expected—say about the 15th of April.

The Delaware, Lackawanna & Western Railroad has begun the erection of another trestle adjoining its coal-docks with a capacity for holding the contents of 300 cars. It is the intention to use this trestle for handling ore from Lake Superior.

Col. Ensign Bennett, the representative here of several important bituminous coal mining interests, says that "the real struggle relative to the strike is between the miners and consumers; for some time, the operators have been mere unpaid workmen, so they now sit down and look on without much interest in the question. There is no money in the business at present prices. How, then, are we going to pay the advance demanded? If we did it, we should simply be giving the control of our mines to the Knights of Labor. I can't say what will come out of the strike. I only say we can't yield to the demands of the men. The real trouble is the overproduction for some months past, which has caused every body to push sales and to lower prices." Stocks are large and will be taken care of so that no scarcity can be felt for a long time. In my opinion, operators have the best of the situation at present.

A prominent man was asked yesterday, "What do the soft coal producers propose to do?" "Why," he answered, "let the miners strike; there is no money in the coal business now for any body. The coal companies get nothing for the product, and the rates given the railroads are so low as not to pay for the hauling. The poor miner has been obliged to work for almost nothing too, but he may find that half a loaf is better than no bread. All we can do is to wait until the overproduction is worked off, and then an advance in prices can be made, which will allow a decent living margin to the miner, railroad and coal companies."

There have been some inquiries made here relative to the purchase of soft coal for delivery in New York City and other points, during the past week, but no special sales have been reported. The market is firm at higher figures on "the take it or leave it" plan.

There is considerable discussion in Canada just now relative to the advisability of increasing the duty on coal, as the present tax does not prevent the introduction of the American article, thereby depriving the Nova Scotia miners of the benefits of the markets of the Ontario and Quebec provinces to a great extent. The present duty is 60 cents a ton. The increase asked would bring it up to one dollar.

Boston. March 24.

[From our Special Correspondent.]

There has been a fairly good demand for anthracite coal at this port. Retailers are buying on the idea that coal is very cheap, and that freights are to be lower at New York right away, on account of the soft coal strike, and lack of coal at bituminous shipping ports. In absence of unfavorable news, a continued increase in demand may be expected. Dealers

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. March 20. H.	March 20. L.	March 22. H.	March 22. L.	March 23. H.	March 23. L.	March 24. H.	March 24. L.	March 25. H.	March 25. L.	March 26. H.	March 26. L.	SALES.
Alice, Mon.	1.65	.....	1.60	.....	1.60	.....	.....	.....	.....	.....	1 65	.....	1,250
Amie Con., Co.	.....	.....	.04	.....	.04	.....	.04	.....	.....	.....	.03	.....	7,200
Argenta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bassick, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belle Isle, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bodie Cons., Ca.	1.40	.....	1 35	.....	1.35	.....	1.35	1.15	1.20	.....	1.25	.....	5,300
Breece	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bulwer, Ca.	.....	.....	.57	.55	.....	.....	.....	.....	.....	.....	.....	.....	500
Cal., B. H.	1.30	1.25	1 35	1.30	.....	.....	1 30	1.25	1.25	1.20	1.15	1.10	1,500
Castle Creek	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chrysolite, Co.	.....	.....	.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	400
Colorado Central	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Cal. & Va., Ne.	.....	.....	2.15	.....	2.15	.....	2.20	.....	2.00	1.90	2.25	.....	3,500
Crown Point	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dunkin, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eureka Cons., Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Father de Smet, Dk.	.....	.....	1.50	.....	.....	.....	1.60	.....	1.40	.....	.....	.....	161
Freeland	1.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	500
Gold Stripe, Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gould & Curry, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand Prize, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Green Mountain, Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hale & Norcross, Ne.	.....	.....	.....	.....	2.50	.....	2.50	.....	2 60	.....	2.60	.....	1,550
Hall-Anderson, N. S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Homestake, Dk.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Horn-Silver, Ut.	.....	.....	3.10	.....	3.00	.....	3 20	3.15	3.11	3.00	2.90	2.80	3,460
Independence, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron Silver, Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leadville C., Co.	.....	.....	.....	.....	.....	.....	.....	.....	.27	.....	.....	.....	1,000
Little Chief, Co.	.....	.....	.24	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Little Pittsburg, Co.	.....	.....	.....	.....	.....	.....	.28	.....	.....	.....	.....	.....	100
Martin White, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moulton	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Navajo, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Belle Isle, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ontario, Ut	30.00	29.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	225
Ophir	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.95	.....	300
Osceola	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.13	15.00	20
Quicksilver Pref., Ca.	.....	.....	.....	.....	22.00	.....	.....	.....	.....	.....	.....	.....	100
" Com., Ca.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quincy	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Robinson Cons., Co.	.85	.....	.....	.....	.....	.....	.85	.....	.....	.....	.....	.....	1,000
Savage, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra Nevada, Ne.	.....	.....	.....	.....	.....	.....	.....	.....	.65	.....	.75	.....	700
Silver King, Ar.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spring Valley, Ca.	.....	.....	.....	.....	.25	.....	.....	.....	.....	.....	.....	.....	1,000
Standard, Ca.	.....	.....	.....	.....	.82	.....	.....	.....	.....	.....	.....	.....	40
Stormont, Ut.	.....	.....	.15	.....	.15	.14	.....	.....	.15	.....	.14	.....	1,100
Tip Top, Ar.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ye low Jacket	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. March 20. H.	March 20. L.	March 22. H.	March 22. L.	March 23. H.	March 23. L.	March 24. H.	March 24. L.	March 25. H.	March 25. L.	March 26. H.	March 26. L.	SALES.
Albion	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
American Flag	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barcelona, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bechtel Con., G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belvidere	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belcher	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Best & B'licher, G. S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Big Pittsburg, S. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bowman Silver	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bull-Domingo, S. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Central Ariz'na, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chollar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Imperial	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Pacific	.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	400
Cusi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decatur	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Durango, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eastern Oregon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Goodshaw, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Harlem M. & M. Co.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Harshaw	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kossuth	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lacrosse, G.	.08	.....	.08	.....	.09	.....	.09	.....	.....	.....	.09	.....	5,300
Mariposa Pref., G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" Com., G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexican, G. S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mono	.....	.....	.....	.....	3.00	.....	2.85	.....	.....	.....	2.70	.....	400
New Pittsburg	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Standard, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Horn-Silv'r, S. L.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ori'nt'l & Miller, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plutus	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Potosi	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rappahannock, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Red Elephant, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ridge	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Cliff, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sonora Con.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Bodie, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Bulwer, G.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Hite	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Pacific	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
State Line, 1 & 4, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" Nos. 2 & 3, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sutro Tunnel	.19	.....	.19	.18	.....	.....	.18	.....	.18	.17	.18	.17	15,000
Tamarack	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tioga	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unadilla, S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union Cons., G. S.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.55	.....	.....	300
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Dividend shares sold, 31,006. Non-dividend shares sold, 21,300.

realize that it is perfectly safe to take on all the coal they need at present, while the risk is not large on purchases for future account, as prices are so low, and while there is, at the same time, a liability of an advance being maintained in the wholesale market. Coal has been sold at New York within a week at $3.10 f. o. b. for stove, which reflects an easing off from last week's basis. It is claimed that outside coal has sold at $3. Broken and Egg have sold at $2.70@$2.80 f. o. b., as stated in your New York report. The increased demand for pea, buckwheat, and pea and dust has been noticeable of late. The extremely low prices at which such sizes have been offered have caused the trade to look that way. Thus, the New York f. o. b. price of hard Pea you report at $1.50@$1.55; free-burning Pea, $1.75; Buckwheat, $1.20@$1.25; Pea and Dust, $1.15@$1.20. It will thus be seen that Pea coal can be laid down in Boston at about 60 cents a ton less than the lowest prices of bituminous before the strike, to say nothing of the existing uncertainty about the delivery of soft coal.

There has been no important movement in soft coal. Jobbers and agents continue to hang back, and there is more disposition to buy than to sell. Of course, all are willing if not anxious to sell for delivery after the labor troubles are over and without guarantee as to time, but buyers will not take this risk. This is well illustrated in the case of the city contract for 1000 tons to be delivered before May 1st. Bids without a guarantee were made as low as $3.69, and from that figure up to $3.80, $3.85, $3.82½. The only bid guaranteeing delivery at the specified time was $3.98, and this was accepted. Before the strike, the contract could easily have been placed at $3.50. It will thus be seen why buyers hold off where their wants do not compel them to make purchases now. The strike continues, with nearly all the miners out. A quick settlement is hoped for.

The soft coal strike, as might be expected, has had an unsettling influence on coal freights and they close weak. A large fleet is expected at New York, if the strike continues, and lower rates there must result. Baltimore quotations are nominal. We quote rates, exclusive of discharging:

New York, $1; Philadelphia, $1.15@$1.25; Baltimore, $1.35; Newport News, $1.05@$1.10; Richmond, $1.25; Cape Breton, $1.60@$1.75; Bay of Fundy, $1.40@$1.50.

There is a moderate retail movement at former figures. We quote:

Franklin Egg and Stove	$7.00
Lorberry " "	6.50
Shamokin Egg	$5.50@ 6.00
Stove	5.75@ 6.00
Lehigh Furnace, Egg and Stove	5.25@ 5.50
Nut	5.50@ 5.75
White Ash Furnace and Egg	4.75@ 5.00
Stove and Nut	5.50@ 5.75
Cannel, American	10.00@12.00
English	14.00@15.00

Wharf prices: Broken, $4.25@$4.50; Egg, $4.25@$4.50; Stove, $5.

Pittsburg. March 25.

[From our Special Correspondent.]

The first coal shipment by the Ohio River began the day my last letter closed. Of course, there could be no estimate of the amount, as all depended on the stage of water, which at that time did not look very promising. Since that, there has been a good boating stage, with a large run, as follows: 3,412,000 bushels; Louisville, 9,694,000; total, 13,106,000 bushels. At the latter port, tows are made up for Memphis, Vicksburg, Natchez, and New Orleans. We have boats that tow at one trip 700,000 bushels. Notwithstanding the big shipment noted above, we have several hundred thousand bushels still waiting on tow-boats.

Prices in this market are without quotable change. River on board, 4@5c. a bushel. Railroad, 4¼@4¾c. The miners along the Monongahela appear satisfied with the situation.

Natural gas is playing a very important part as "the fuel of the future," and is destined to work a revolution in more ways than one. Already, contracts have been made to pipe natural gas to Wheeling and other points.

The Connellsville regions remain quiet. Miners and others seem peaceably inclined. Production is as large as can be made under the circumstances. The current rates are: Blast-furnace, $1.35, f. o. b. cars at the ovens; Foundry, $1.50; Crushed, $1.80@$2. At this time, there are but few idle ovens.

FINANCIAL.

Mining Stocks.

NEW YORK, Friday Evening, March 26.

A stronger feeling has been manifested in the mining market, and a number of stocks that have not been dealt in for some time have again appeared on the list. The transactions show an increase of 9481 shares, as compared with those of last week. The total transactions amount to 52,306 shares.

The Colorado stocks were the most active on the list. Amie was extensively dealt in at 4 and 3c. Lacrosse at 8 and 9c. Robinson Consolidated shows sales of 1000 shares at 85c. a share. Leadville, the same amount at 27c. Chrysolite shows a few sales at 70c. Little Pittsburg, at 28c. Little Chief, at 24c. Freeland, at $1.25.

More interest has been manifested in the Bodie stocks, which have been dormant for some time past. Bodie Consolidated declined from $1.40@$1.15, closing at $1.25. Bulwer ruled at from 57@55c. Consolidated Pacific, at 35c. Mono, at from $3@$2.70. Standard, at 82c. A few shares of Quicksilver Preferred sold at $22. Sales of 1000 shares of Spring Valley are reported at 25c.

The Comstocks were almost entirely neglected, and transactions are only reported in the most prominent of the group. Consolidated California & Virginia shows large sales at prices ranging from $1.90@$2.25. The same may be said of Hale & Norcross, which is quoted at from $2.50@$2.60. Sutro Tunnel has been active, with sales amounting to 15,000 shares at from 19@17c.

Horn-Silver shows a downward movement, going from $3.20@$2.80. Ontario was fair at $30 and $29. Stormont was active at 14 and 15c., with sales of 1100 shares.

Caledonia, which last week showed higher prices, has this week shown a declining tendency, going from $1.30@$1.10. Father de Smet was quiet at from $1.60@$1.40.

The following securities were sold at auction on the 24th inst in this city:

8-10 share New York Wire and Wire Rope Company, $100 each, for lot, $6; 13 shares Negaunee Concentrating Company, $100 each, for lot, $50; 500 shares Bald Mountain Mining Company, $10 each, for lot, $2; 800 shares Red Elephant Mining Company, $10 each, for lot, $21; 64 shares Guadaloupe & Sacramento Gold and Silver Mining Company, $100 each, for lot, $4; 6482 shares Alleghany & East Sandy Rock Oil and Mining Company, $4 each, for lot, $4; 250 shares Rips & Buell Gold Mining and Smelting Company, $2 each, for lot, $1; 94 shares Alleghany Iron and Coal Company, for lot, $5.

COAL STOCKS.

NAME OF COMPANY.	Par value of shares.	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted so much per share.												Sales from March 20th to March 26th, inclusive.
		March 20.		March 22.		March 23.		March 24.		March 25.		March 26.		
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Barclay Coal														
Cameron Coal	50	16		15⅞	15½	15⅝	15⅛	15	13¾	15⅝	15	16½	15	9,215
Col. C. & I	10	26⅛		26	25½	25⅝	24¼	23¾	23¼	24⅝	23½	24⅝	24	6,375
Ches. & O. RR	100			10¾		10				10				700
Consol. Coal	100													
Cumb. C. & L	100													
Del. & H. C	100	101½	100	102⅜	101	103	99¾	100	98⅝	101	99⅞	101	100	49,806
D., L & W. RR	50	126⅞	124¼	128⅝	126⅛	129½	126	127	125¼	128	126⅞	128	126¾	512,405
Elk Lick Coal Co														
Lehigh C. & N.†	50	50¼	50⅛	50¼		50⅛	50¼	50⅛	50	50	49¾			2,890
Lehigh Valley RR.†	50	58		58		57¾	57	57		57½	57¼			576
L. & W. C. & I Co.														
Maryland Coal	100													
Montauk Coal	100													
Morris & Essex	50							137½						20
New Central Coal	100			11½	11			10				11¾		395
N. J. C. RR.	100	50½	49	50⅝	49¾	51⅛	48	48¾	46⅝	48⅝	47½	48⅝	47¾	81,862
N. Y. & S. Coal	50													
Penn. Coal	50													
Penn. RR †	50	53¾	52¾	53¼	52¾	53	52¼	52⅜	52⅜	53¼	53			20,752
Ph. & R. RR.*	50	26	24⅞	26¼	25⅛	26	24	24½	23	25¼	24½	25⅛	24½	147,477
Spring Mountain	50													
Westmoreland Coal†	50													

* Of the sales of this stock, 52,632 were in Philadelphia, and 94,845 in New York.
† The quotations for these stocks are not percentage, but actual price. Total sales, 832,473.

Coal Stocks.

The stock market during the past week has been very much depressed, owing to the very unsettled nature of the labor question. A large line of weak holders has been shaken out, and considerable liquidation has taken place. The present tone is very uncertain. Prices are likely to have a further decline, if the news continues of an unfavorable character; but should the reports be favorable, a considerable advance is not improbable.

The decline started on the announcement of the formation of a coal combination, which it was thought would advance the prices of the coal stocks. Instead, however, Lackawanna, for instance, was dropped 4¼ per cent below the highest point reached immediately after the announcement. Since then, it has been very strong, and is likely to be among the first stocks to respond to a better condition of things, especially if Monday's combination meeting should prove quite harmonious.

The dealings in Lackawanna aggregate 512,405 shares at $124¼@$129½, closing at $127¼. Delaware & Hudson, with transactions of 49,806 shares at $102⅝@$99¾, closed at $100½. Reading was dealt in to the extent of 94,845 shares at $26¼@$23, closing at $24⅛. The sales of Jersey Central amount to 81,862 shares at $50⅞@$46⅜, closing at $47⅞. The market closed quiet and a shade weak.

Dividends.

Derbec Blue Gravel Mining Company, of California, has declared dividend No. 12, of ten cents a share, payable March 22d, at San Francisco.

Meetings.

The annual and special meetings of the following companies will be held at the times mentioned:

Central Mining Company, No. 76 Wall street, New York City, April 5th, at twelve o'clock M.

Dana Mining Company, No. 70 Devonshire street, Boston, Mass., April 19th, at three o'clock P.M., special meeting to authorize a sale and conveyance of all the real estate of the company for the purpose of winding up the affairs of the company, its charter having expired by limitation.

Franklin Mining Company, No. 19 Congress street, Rooms 11 and 12, Boston, Mass., April 21st, at twelve o'clock M., to discuss the question of directing, by a resolution of the stockholders passed for that purpose, the continuance of the corporate existence of said company for a further term, not exceeding thirty years, in accordance with the laws of Michigan.

Mountain Gem Mining Company, No. 130 Pearl street, New York City, April 13th, at three o'clock P.M.

Pelican & Dives Mining Company, No. 197 Broadway, New York City, April 6th, at two o'clock P.M.

Resolute Mining Company, office of M. H. Hoffman, No. 629 Walnut street, Room No. 7, Philadelphia, Pa., April 5th, at twelve o'clock M.

Star Mining Company, No. 70 Devonshire street, Boston, Mass., April 19th, at four o'clock P.M., special meeting to authorize a sale and conveyance of all the real estate of the company for the purpose of winding up the affairs of the company, its charter having expired by limitation.

Westmoreland Coal Company, No. 224 South Third street, Philadelphia, Pa., April 7th, at twelve o'clock M.

ASSESSMENTS.

COMPANY.	No.	When levied.	Delinquent in office.	Day of sale.	Amount.
Alpha, Nev	20	Mar. 4	April 8	Apl. 29	.50
Andes, Nev	28	Feb. 16	Mar. 23	Apl. 12	.25
Benton Con., Nev	15	Feb. 4	Mar. 11	Mar. 30	.10
Black Hills Oil, Dak	..	Feb. —	Mar. 15	Apl. 10	.02
Buchanan, Cal	15	Feb. 9	Mar. 17	Apl. 5	.25
Buena Vista Petroleum, Cal	33	Mar. 16	April 20	May 10	1.60
Columbia, Dak	..	Mar. 15	April 15	May 15	.01
Con. Pac., Cal	8	Feb. 18	Mar. 22	Apl. 15	.15
Courier, Utah	..	Feb. 3	Mar. 11	Mar. 31	.03
Crocker, Ariz	2	Mar. 10	Apl. 13	May 4	.20
Enterprise, Dak	..	Feb 6	..	..	.01
Forty-Nine, Cal	1	Feb. 4	Mar. 15	Apr. 5	.10
Hale & Norcross, Nev.	89	Feb. 11	Mar. 18	Apl. 8	.50
Johnson Gravel, Col.	3	Feb. 3	Mar. 8	Apl. 6	.02
Lady Wash., Nev	5	Feb. 4	Mar. 9	Mar. 29	.05
Martin White, Nev	21	Mar. 12	Apl. 20	May 20	.25
Mexican, Nev	31	Feb. 9	Mar. 15	Apl. 8	.25
North Belle Isle, Nev	10	Mar. 2	April 6	Apl. 28	.20
Omilak, Alaska	4	Feb. 20	Mar. 30	Apl. 17	.05
Ophir, Nev	50	Feb. 4	Mar. 9	Mar. 29	.30
Peerless, Ariz	7	Mar. 3	April 5	Apl. 27	.25
Potosi, Nev	22	Feb. 5	Mar. 9	Mar. 31	.30
Rainbow, Dak	1	Feb. 2	Mar. 8	Mar. 27	1-10
Ropes, Mich	..	Mar. 8	April 3	..	.10
Ruby, Dak	..	Mar. 13	Apl. 24	May 25	½
Wyoming Standard Oil, Dak	2	Feb. 24	Mar. 31	Apl. 10	.01

Pipe Line Certificates.

Messrs. Watson & Gibson, commission brokers, No. 49 Broadway, report for the week as follows:

The oil market during the past week has been very weak. The feeling among brokers is, that prices may go lower under the increasing development in the Kane and Washington field. The break from 76 to 73 was chiefly on the report that the Thyng well on the outskirts of Kane would be a good producer. There is not much short interest, and indications are, that lower prices will be made.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange:

	Opening.	Highest.	Lowest.	Closing.	Sales.
March 20	77	77⅝	76⅝	76⅞	2,597,000
" 22	76⅞	77¼	76¾	76⅞	1,191,000
" 23	77¼	77⅝	76	76⅛	2,530,000
" 24	76⅛	76⅝	74	74	4,560,000
" 25	74	74½	73	73½	5,748,000
" 26	73¼	74	73	73⅝	3,816,000
Total sales					20,442,000

Boston Copper and Silver Stocks.

[From our Special Correspondent.]

BOSTON, March 25.

The market for copper stocks has been fairly active the past week, and in the early dealings was quite firm; but the depression of the past few days in the general stock market has been felt in this line of specialties, although not to a marked extent, as the firm market for ingot copper seems to have prevented the decline that might, under other circumstances, have taken place. Calumet & Hecla has ruled very firm; all the stock offered has been taken at $230, and closes steady; sales, 120 shares. Quincy declined to $50 on sales of 112 shares. Franklin was steady and firm at $14¾; but more stock being offered than the market would take, it declined to $14, and was offered at that price to-day; sales, 560 shares. Osceola declined from $17¼@$16 on sales of only 157 shares. Atlantic has been quite active this week, and quite a number of orders to buy the stock on the good showing in the annual report recently published; sales at $10⅝@$10¾—nearly all at the latter price; sales, 1050 shares. Tamarack advanced from $88 (February 26th) to $98 for a small lot, and $95 for a lot of 150 shares. Huron was a little heavy, but only 50 shares were sold at $2½@$2¾, no round lots being offered at less than $3. Ridge sold at ⅝—same as last week. Total sales for the week, 2230 shares.

In silver stocks, there has been little doing at either Exchange. Catalpa sold at 32½c. Napa Quicksilver, at $1. Bowman declined to 10c. Dunkin, offered at 32c. Blue Ridge Gold, steady at 35@37½c. Brunswick Antimony declined from $12@$7 on sales of 200 shares.

San Francisco Mining Stock Quotations.

Daily Range of Prices for the Week.

NAME OF COMPANY.	CLOSING QUOTATIONS. Mar. 19.	Mar. 20.	Mar. 22.	Mar. 23.	Mar. 24.	Mar. 25.
Albion						
Alpha						
Alta			.30			
Argenta						
Bechtel						
Belcher	1.12½	1.00			1.12½	1.12½
Belle Isle						
Best & Belcher	1.37½	1.37½	1.37½	1.37½		1.37½
Bodie	1.50	1.37½	1.37½	1.25	1.25	1.25
Bullion						
Bulwer			.50		.55	.50
Challar	1.00	1.00	.95	.90		.90
Con. Pacific	.20			.35	.30	
Con. Cal. & Va.	2.12½	2.00	2.12½	2.12½	1.62½	2.25
Crown Point		1.00				.95
Day						
Elko Cons						
Eureka Cons	1.75	1.50	1.62½	1.87½	1.75	
Exchequer						
Gould & Curry	.85	.85	.85	.80	.85	.80
Grand Prize						
Hale & Norcross	2.62½	2.50	2.50		2.50	2.62½
Independence						
Martin White						
Mexican	.60	.65	.60	.60	.60	.55
Mono	3.37½	3.00	2.50	2.37½	2.37½	2.50
Mount Diablo		3.87½				3.50
Navajo						
Northern Belle						
North Belle Isle						
Ophir	.90	.85	.80	.85	.80	.85
Overman						
Potosi	.60	.55	.55	.50	45	.55
Savage	1.25	1.12½	1.12½	1.12½		1.12½
Scorpion						
Sierra Nevada	.65		.65	.65	.65	.60
Silver King						
Tip-Top						
Union Cons			.50	.45	.50	.45
Utah	.50					
Wales Cons						
Yellow Jacket	.95			.90		

Unlisted Stocks and Foreign Quotations.

We give below the most reliable quotations obtainable for unlisted stocks and quotations on outside and foreign exchanges:

NAME OF COMPANY.	Location.	Price.	Where quoted.
Adams, S. L.	Colo.	$4@$5	Unlisted
Bellevue, S. L.	Idaho	$5	Unlisted
Big Bend H'dr'lc, G.	Dak.	$5	Unlisted
Bird's Eye Creek, G.	Cal.	$6.25@$7.50	London
Bonanza King, G	Cal.	$10	Unlisted
California, G	Colo.	50@75c.	London
Colo. United, S. L.	Colo.	$14.37½@$16.67	London
Eb'rh'dt & Mon't'r, S	Nev.	$1.00@$1.12	London
Elkhorn, G. S.	Mont.	$10	Unlisted
Golden River, G	Cal.	$116*	Paris
" Parts Civiles	Cal.	$46*	Paris
Granite Mt., S	Mont.	$21	St. Louis
Helene, G. S. L. C.	Mont.	$2	Helena
Honorine, S L	Utah	75c.	Unlisted
Kohinoor & Donaldson, G. S.	Colo.	37@62c.	London
La Plata, S. L.	Colo.	$1.00@$1.25	London
La Trinidad, S.	Mex.	$20.00@$22.50	London
Lexington, G S	Mont.	$12	Paris
" Org'niz'rs' shares	Mont.	40c.	Paris
Montana, Lt., G. S.	Mont.	$25.00@$26.25	London
New Albion, G.	N. S	$4.37½@$5.62½	London
New Emma, S.	Utah	75c.@$1.25	London
New Hoover Hill, G. S	N. C.	$1.12@$1.37	London
Plumas Eureka, G.	Cal	$3.12½@$4 37½	London
Richmond Con., S. L	Nev	$23.12½@$24.37½	London
Ruby & Dunderberg, G.	Nev.	$1.37@$1.62	London
Russell Gold, G	N. C.	$1.00@$1.25	London
Sierra Buttes, G	Cal.	$6.25@$7.50	London
Silver Queen United, S.	Mex.	$9.37½@$10.62½	London
St. Joseph's, L	Mo.	$7@$7.50	Unlisted
United Mexican, S.‡	Mex.	$16.87½@$18.12½	London

Foreign quotations are per mail advices.
* The above quotations were given July 5th, 1885. Since then, there have been no quotations. ‡ New issue.